

JUNE 15, 1912

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ONE YEAR, \$2.00

THE COMMERCIAL CAR JOURNAL

Entered as Second-Class Matter at the Post Office at Philadelphia, Pa.



Peerless 5-Ton Motor Truck operated by J. L. & H. Stadler, of Cleveland. Its efficient performance has led to the purchase of two other Peerless Trucks.

PEERLESS MOTOR TRUCKS

3-Ton 4-Ton 5-Ton

THE 5-Ton Peerless Motor Truck illustrated above was placed in service last fall. During the winter it operated over roads at times nearly impassable for horses—often through snow-drifts that brushed the radiator.

Although each day's route called for some seventy stops, the driver found it possible to load and get away while a team would have been backing into place for loading; and the Peerless Truck averaged forty miles daily, without being laid up an hour for repairs.

This performance led to the purchase of the second Peerless Truck, which went into service March first. The two trucks replace seven two-horse teams.

They have extended the radius of operation, and are doing the work better.

A third Peerless Truck has been ordered for the same service.

Peerless Trucks are giving good accounts of themselves. This is in part due to our firm determination never to sell a Peerless Truck until we are reasonably assured that it will prove profitable to the user. Correspondence is invited.

TRUCK DEPARTMENT
The Peerless Motor Car Company
Cleveland

PUBLISHED THE
15TH OF EACH MONTH

CHILTON COMPANY

MARKET & 49TH STS.
PHILADELPHIA

KOEHLER COMMERCIAL CAR

CARRYING CAPACITY 1600^{LBS.} \$750.

The Maximum and Minimum Car

No other delivery wagon can compare with the value, capacity and service which this car offers.

Here is the immensely important fact—1600 lbs. capacity, price \$750.



OPEN FLARE-BOARD TYPE
Large and Roomy—inside measurements 44 inches wide, 84 inches back of driver's seat to rear. Flare-boards, 17 inches above floor. Strongly ironed throughout, also ironed to receive four-post canvas top, which can be had from stock at \$40 additional. Suitable for general express work.
CARRYING CAPACITY, 1600 LBS. PRICE, \$750. Prices of Various Types of Bodies Range From \$40 to \$150 extra.

The KOEHLER COMMERCIAL CAR was designed by and is built under the supervision of L. E. Schlotterback—the foremost commercial car designer. A man who has spent his business life solving transportation problems.

SPECIFICATIONS

MOTOR:—Two-cylinder, horizontal opposed, 4 cycle, 22-24 H. P. Bore 5½ inches. Stroke, 4 inches. 300 miles one change of oil.

COOLING SYSTEM:—Thermosyphon through large pipes and large radiator at front of car. Piping and connection exceptionally heavy.

IGNITION:—Jump spark with strictly high-tension Bosch magneto.

STEERING GEAR:—Bevel pinion and sector type, 16-inch hand wheel.

DRIVE:—Motor in direct line, double universal joint, with jackshaft and immediately connected thereto by a universal joint.

TRANSMISSION:—Planetary type. All gears of genuine chrome nickel steel hardened throughout with phosphorous bronze bearings on hardened steel shafts in semi-steel casings. Transmission bands also of semi-steel which cannot slip or burn. High speed clutch, cone type, metal to metal running in oil.

Particularly adapted to all merchants—large and small. Dry goods, hardware, laundries, groceries, butchers, etc., etc.

FRAME:—A channel section steel frame "U" shaped, 3 x 1½ inches, is continuous and extends at front of car, acting as bumper, protecting radiator and forward part of car.

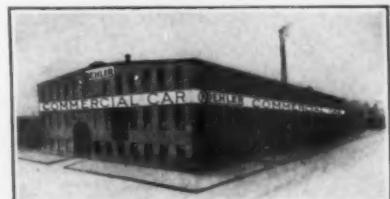
AXLES:—Front axle, 1½ square, positively a one-piece iron forging with knuckle yokes integral. Rear axle, 2 inches square. Those experienced will appreciate these axle dimensions and the fact that neither axle is welded. Both axles are 40 pt. carbon steel.

TIRES:—Two inch solid rubber motor side wire. **WHEELBASE:**—85 inches. **TREAD:**—58 inches. **SPEED:**—Four to sixteen miles per hour on direct drive. **WHEELS:** 36 inches front, 45 inches rear. **FUEL CAPACITY:**—Gasoline 16 gallons; Oil, 1 gallon. Both gasoline and oil tank accessible under seat.

SIMPLICITY:—The KOEHLER COMMERCIAL CAR cannot be compared with the ordinary horse drawn vehicle. This is designed to take the place of the one and two-horse vehicles and is so simple in operation that the drivers of the horse-drawn vehicle can successfully operate it.

The KOEHLER is a glutton for work. Built to withstand the most severe usage. Will take the punishment of 365 days' work a year without any trouble—a delivery car from the ground up—not a converted pleasure car.

Built in a large, modern factory, splendidly equipped. Designed by L. E. Schlotterback, America's foremost commercial car engineer. Sales department under supervision of H. J. Koehler, Pres. and Treas., the largest distributor of automobiles.



SPECIAL FEATURE

OIL TIGHT CASE:—In which transmission, differential, bevel gears and metal to metal clutch run in a CONSTANT OIL BATH. 1,000 miles with one supply of oil.

DEALERS

Territory is now being closed.
Write for catalog and agency terms.

Address all Correspondence to 1709 Broadway, New York

H. J. KOEHLER S. G. Co.

"BUILT IN
NEWARK,
New Jersey"

THE PUBLISHERS' PERSONAL PAGE

Be Wise Today, 'Tis Madness to Defer

Are You Prepared
 for the hot spell which is inevitably coming? Is your delivery system important to the success of your business? These are pertinent questions and ones which the wise business man will look into at once. "Do not lock the door after the horse is stolen," but prepare now to maintain the efficiency of your delivery system during the heated summer months.

"Actions Speak Louder Than Words"

Last year the delivery service of a great many companies was completely demoralized, to say nothing of the actual money loss by heat prostrations of the horses. In New York City alone, during the first two weeks of July, 1708 horses died, and during the last two weeks 791. In August 906 perished of heat. During these same two months, in Chicago, 1900 died.

According to the report of the S. P. C. A. every ambulance in Philadelphia was in constant service, but the requests for the removal of prostrated horses were so numerous, that they were forced in many instances, to leave the animals on the street for a time, until the ambulances returned from other calls. Various estimates place the loss of horses for the month of July alone, throughout the country, at from thirty-five to forty thousand. Think of it! \$10,000,000 worth of horses lost in one month. Is it any wonder the wise business man uses trucks?

Prepare Now

for this hot weather, so that history will not repeat itself in your case. Orders for trucks poured in to the agents following this period of torrid heat, at a rate far beyond that at which they could be filled. In the meantime deliveries were delayed and

thermometer is at its highest the driver must seek a place of shade in which to let the horse stand, often interfering with the best means of delivering. The same load that the horse would ordinarily carry must not be put upon him when the thermometer is up, thus limiting his capacity. He must be watered at frequent intervals, all of which takes time, but if neglected, greater delays may occur. If the horse shows signs of weariness his head is to be bathed with cold water, his mouth washed out, and he is to be given a half hour's rest while the impatient customers wait. If he still shows signs of exhaustion he is to be bathed with cold water all over, or even to have ice applied to his head. Can you, as a business man, be bothered with such petty troubles?

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the users of horses were sorely pressed for facilities adequate to their needs.

Order Now!

Now is the time to order your cars; do not wait until trouble begins, but prevent the trouble by having your deliveries made by motor trucks, which are not affected by the greatest heat or by any other weather conditions.

Disadvantages of Horses

The Society for the Prevention of Cruelty to Animals tells what not to do with horses. These instructions show clearly the disadvantages of horses in hot weather. When the

is still time. Those suitable for your work will be found in the advertising pages of the COMMERCIAL CAR JOURNAL.

Twenty-five Dollars For a Picture

THE COMMERCIAL CAR JOURNAL offers \$25 for the best photograph, showing horses prostrated with the heat, particularly in conjunction with commercial cars receiving their loads or delivering the goods. All photos should be sent, preferably unmounted, to the EDITORIAL DEPARTMENT.

The Autocar

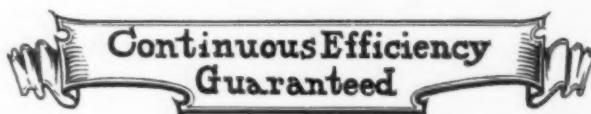


THE TRIUMPH OF MODERN DELIVERY

Where would the business man stand to-day were he to build a seven-story building, and display goods on each floor, without the accommodating elevator to reach any of these floors? The answer is evident—his business progress would be remarkably slow. The successful business man keeps abreast with the times, and introduces improved conditions. Elevators—telephones—cash registers—and automobiles are the progressive business man's assets, and their use results in the upbuilding of a greater business. The Autocar Company points with pride to its list of over 600 of the country's leading business men who are using from one to eighty Autocars each.

They are the business-building men of our country in industrial centers. In selecting the Autocar product they have established a wider scope to their delivery area, and are providing better service for their customers by a more prompt system of delivery.

We will be pleased to send you our list of users—and our catalogue No. 4C will explain the economical and all-round-season merit of our product.



The Autocar Company, Works, Ardmore, Pa.
Established 1897

Sales and Service Buildings

PHILADELPHIA

23rd and Market Streets

Chicago, Ill., 918 S. Michigan Ave.
Toronto, Can., Bay and Temperance Sts.

NEW YORK

428-430 1/2 W. 19th Street

435-437 } Beacon Street—Commonwealth Ave.

Atlanta, Ga., 56 Magnolia Ave.

San Francisco, Cal., 545 Golden Gate Ave.

BOSTON

St. Louis, Mo., 4739 McPherson Ave.

Los Angeles, Cal., Main and Washington Sts.

The Commercial Car Journal

VOLUME III

PHILADELPHIA, JUNE 15, 1912

NUMBER 4

A SUMMER COMMERCIAL CAR SHOW IN 1913

It is within the bounds of possibility that the summer of 1913 will see a commercial car exhibition and demonstration conducted by the N.A.A.M., Inc., on a gigantic scale. This exhibition may or may not take place of the winter shows as now held, this being a subject for which the opinion of the trade will be canvassed. The subject was discussed at some length at the meeting of the executive committee June 4th, and referred to the show and commercial car committees for consideration.

MEETING OF COMMERCIAL CAR SECTION OF N. A. A. M.

The second meeting of the commercial car section of the National Association of Automobile Manufacturers was held on June 4th at their offices, No. 32 E. 42nd St., New York. It was well attended and resulted in several important actions, among which were the adoption of a standard guarantee, the adoption of a caution plate pointing out that excessive speed or overloading would render the guarantee void. It was also practically decided that a commercial car show should be held during the summer of 1913.

The form of guarantee recommended includes a 90-day limit, provides for replacements only where defect of workmanship or material is discovered within that limit and separates the warranties of replacement from the contract of sale.

The convention also recommended to the N. A. A. M. that a warning plate be authorized for every truck turned out. These plates will contain the carrying capacity of the truck, the chassis weight, body allowance, useful load weight, total loaded weight and rated speed. The caption will read: "Caution: overloading and overspeeding will void your warranty."

These plates, it is proposed, shall be placed on the back of the driver's seat, in a conspicuous place.

The committee on production and sale made an interesting report showing that up to January 1, 1912, eighty-two manufacturing companies had made and sold something over 18,000 trucks of various types and styles. This is believed to represent about two-thirds of the total of about 27,000 trucks. The report stated that this fraction of the total number of trucks put out by American manufacturers is valued at \$35,000,000.

Reports were also made of progress in the matters of investigation of frame and platform heights from the ground with a view to determining whether or not it would be feasible to establish standard heights, investigation of tire mileage in different cities as related to topography and street pavements, and proportion of chassis weight to useful load capacity. Data in hand are insufficient for any recommendations at the present time.

Results of a conference between the commercial vehicle committee of the N. A. A. M. and H. F. Donaldson, president, C. F. Clarkson, manager, and W. P. Kennedy, chairman of the truck standards committee of the Society of Automobile Engineers, held June 3rd, were reported to the convention. At that meeting it was decided that the manufacturers' association would confine its standardization work to characteristics affecting particularly the selling and use of trucks, while the S. A. E. will devote itself to determining prevailing practice with regard to units of the structure and publishing its findings as recommended practice.

N. A. A. M. EXECUTIVE COMMITTEE ADOPTS RECOMMENDATION FOR CAUTION PLATE

Following a one-day meeting of commercial motor vehicle manufacturers held June 4, in New York, the Executive Committee of the National Association of Automobile Manufacturers, Inc., passed resolutions adopting unanimously the recommendations of the convention for a standard motor truck warranty and a standard form of caution plate. The warranty is the same in intent as the form recommended by the first convention of the trade held last March, but has been rearranged and altered somewhat in phraseology to make it acceptable to the largest possible number of truck makers.

The wording of the recommended caution plate is as follows:

CAUTION
Overloading or Overspeeding Will

Void your Warranty.

..... Ton Truck.

No..... Speed..... Miles per Hour.

Standard Actual

Weight of Chassis lbs. lbs.

Body Weight Allowance lbs. lbs.

Useful Load Capacity lbs. lbs.

Total weight, chassis,

body, and load not to

exceed lbs. lbs.

Name of Manufacturer.

The size and style of this plate are yet to be determined by the Commercial Vehicle Committee of the N. A. A. M. It is intended that this plate shall supplement the name plate on the dash and be attached to the back of the driver's seat or in some other place where it will confront the man who loads the vehicle. It has a trifold purpose, viz.: to warn against the most common abuses, to exert a moral effect upon the body builder, to keep the weight of the body down as nearly as he can to the standard body weight allowance, and to have a record on the machine of the total weight with load so that a "scout" for the truck maker can, when he observes a flagrant case of overloading, have the truck driven to the scales and check up the actual weight with the figures on the caution plate.

N. A. A. M. ARRANGES CIRCUIT OF LOCAL SHOWS

At a meeting held on June 4th, the following schedule was arranged for the holding of 1913 automobile shows: Cleveland, January 6-11; New York, January 11-18; Philadelphia, January 20-25; Detroit, January 27-February 1; Chicago, February 1-8; Minneapolis, February 10-15; Kansas City, February 17-22; St. Louis, February 24-March 1; Pittsburgh, March 3-8; Boston, March 8-15; Buffalo, March 17-22; Indianapolis, March 24-29.

The representatives of the local trade associations were present, as were Messrs. A. L. Pope and S. A. Miles representing the N. A. A. M. The advantages of this schedule from the manufacturer's standpoint are that he will be enabled to refuse the demands made by shows other than those on the circuit, will avoid conflict of dates and consequent duplicates of exhibits and employes, and will have a continuous circuit without loss of time or unnecessary long journeys. On the other hand, the promoters who were fortunate enough to obtain positions on the circuit will be practically assured of the support of the manufacturers and of other advantages resulting from co-operative action. The Pittsburgh dates are somewhat in doubt as they were fixed, provided the rival trade organizations combine.

S. A. E. WILL CRUISE ON GREAT LAKE

The program which has been announced for the Mid-Summer meeting of the Society of Automobile Engineers at Detroit, Mich., June 27th to 29th, includes a two day trip on the Lake steamer, "City of Detroit," which will leave Detroit on Thursday evening, June 27th at 8 P. M., going to Mackinac Island, returning the following Saturday night. All of the proceedings of the Society of Automobile Engineers will be held on board, including all of the proposed meetings, with the exception of the business meeting, which is to be held on Thursday morning, June 27th at the Hotel Pontchartrain, Detroit.

The steamer has been chartered for the exclusive use of the S. A. E., each member paying \$15 for the round trip, which includes transportation, meals and berth. This is an ideal plan as it will insure the holding together of the entire convention for all of the meetings and will also guarantee them against extremely hot weather.

CHICAGO FALL TRUCK SHOW ABANDONED

Owing to the refusal of the South Park Commissioners to grant permission to the Chicago Automobile Trade Association to hold the proposed open air Commercial Car show next fall, the project has been abandoned and there will be no motor truck show held in Chicago this fall other than the annual fall opening week, September 14th to 21st.

The bill which is before the Massachusetts legislature, restricting the use of highways to trucks of certain weights, and tires of certain widths, as mentioned in these columns previously, has been held up indefinitely.

A paper on "the Tractor" will be read by L. W. Ellis at the semi-annual convention of the National Gas Engine Association, which will be held in Milwaukee from June 17th to 22nd.

AMERICAN MAKERS SHOULD EXHIBIT AT THE PARIS SHOW

The date for the Paris Automobile Show has been fixed for Saturday, December 7th, and it will close on Sunday, December 22nd. Application for space must be made by June 30th. This year's show is promoted entirely by Automobile and Accessory manufacturers, the following five trade associations combining in the promotion of the show: Automobile Syndicate, Cycle & Automobile Syndicate, Automobile & Accessories Syndicate, Body Makers Syndicate and Accessory Manufacturers Syndicate. 40 per cent. of the profits will be distributed to all exhibitors in proportion to the amount that they paid for space. An additional 40% will be distributed to exhibitors who have been members of any one of the five associations for a period of six months, and the remaining 20% of the profit will be paid pro rata to the treasurers of the five associations in proportion to the amount that their members have paid for space. The Automobile Club of France is only an honorary figure in the holding of the Show.

GIGANTIC PLANS OF THE UNITED STATES RUBBER COMPANY

At a recent meeting of the directors of the United States Rubber Company, it was decided to increase the capital from \$75,000,000 to \$120,000,000 of which \$80,000,000 is to be preferred and \$40,000,000 to be common stock. It was also decided to build a new large factory in addition to those which the Company now operates, the new factory to be capable of producing 5000 tires daily. As the United States Rubber Company now operates large factories located at Hartford, Providence, Detroit and Indianapolis, the addition of this new factory will give the Company probably the largest output of tires in the world.

THE NEW \$3,500,000 SPLITDORF CORPORATION

The Splitdorf Electric Company has been incorporated with a paid in capital of \$3,500,000, of which \$1,500,000 is 7 per cent. cumulative preferred stock and \$2,000,000 common stock. John F. Alvord, the well-known head of the Torrington Company, of Torrington, Conn., and actively connected with a number of other concerns manufacturing automobile parts and accessories, is president of the new Splitdorf Company, and brings with him into the new company several men who have been identified with his large enterprises. They are Bryant S. Kiefer, who has been elected treasurer of the new Splitdorf Company, and Carlos W. Curtiss, who is secretary and general manager. Chas. F. Splitdorf, who has made Splitdorf Ignition Apparatus famous from one end of the country to the other will be vice president of the new concern, and will continue his inventive and selling activity as in the past. The Board of Directors is composed of the four officers named, and John R. Viles. The new company takes over the entire C. F. Splitdorf, Inc., interests, and the present large output of Splitdorf magnetos, coils, plugs, etc., will be considerably enlarged.

BOSTON ELECTRIC VEHICLE ASSOCIATION held its annual parade on May 30th, in which 131 vehicles participated, 122 of them being commercial cars.



B. F. GOODRICH COMPANY BUYS THE DIAMOND RUBBER COMPANY

The B. F. Goodrich Company, Akron, O., has purchased the entire business of the Diamond Rubber Company. It is understood that to consummate this gigantic purchase, the Goodrich Company will issue \$45,000,000 in additional stock, which will make its total capitalization \$90,000,000, the stockholders of the Diamond Company receiving part cash and part stock in the B. F. Goodrich Company in payment for their holdings. It is also stated that the Goodrich Company will retain the executive staff of the Diamond Company in addition to its present staff. The proposed directors and officers of the Goodrich Company will probably be as follows: B. G. Work, president; A. H. Marks, vice president; E. C. Shaw, second vice president and works manager; H. E. Raymond, second vice president and sales manager; W. B. Miller, second vice president and assistant sales manager; C. B. Raymond, secretary; W. K. Means, treasurer; F. A. Hardy, chairman of the Board of Directors; F. A. Mason, vice chairman; O. C. Barber and C. C. Goodrich, new members of the board.

LOCOMOBILE COMPANY EXPANDING

Locomobile Company of America, Bridgeport, Conn., has voted to increase its capital stock from \$5,000,000 to \$6,500,000, being \$3,500,000 in common stock and \$1,500,000 preferred. It will also issue \$1,500,000 6 per cent. ten year mortgage bonds, and \$2,500,000 6 per cent. twelve year debenture bonds. According to a statement issued the net earnings for the Company for the year ending December 31st, 1911, averaged \$347,520.

The company proposes to almost double its output, a very large percentage of the increase being the new five-ton trucks which it has recently introduced.

UNIVERSAL WILL REMOVE TO MILWAUKEE

It is stated that the Universal Motor Truck Company will remove to Milwaukee and that the Detroit plant will be utilized by the new Metzger combine. A new one ton truck is contemplated for the Universal line. There is also a rumor that the Universal Company, the A. O. Smith Company, Flanders Manufacturing Company, Everitt Motor Car Company and others will be amalgamated into one large company with about \$60,000,000 capital.

KELSEY WHEEL COMPANY DOUBLES ITS PLANT

The Kelsey Wheel Company, 1208-50 Military Avenue, Detroit, Mich., manufacturer of automobile wheels, is building additions to its plant 180 x 360 ft., two stories high, which will more than double its capacity. It is also adding new dry kilns of the very latest type, and two new store-houses capable of storing 100 car loads of hickory. This company claims to be the largest exclusive maker of automobile wheels.

B. A. GRAMM, PIONEER COMMERCIAL CAR MANUFACTURER, FORMS A NEW COMPANY TO PRODUCE A NEW TRUCK

When John N. Willys bought a controlling interest in the Gramm Motor Truck Company, Lima, Ohio, it was at first thought that Mr. Gramm would be allied with the Willys-Overland interests, but after careful consideration, he felt that it was an opportune time for him to now bring out his new designs, which he believes will be the standard for years to come, and will, therefore, have his own plant and give to the market his trucks and policies unrestricted by any financial restraints. He is surrounded by an exceedingly strong organization, and will thoroughly perfect every detail before showing the models to the public. His trucks will be very simple, with fewer working parts, from a point of comfort to the driver, and will be accessible in every part, and absolutely standardized and interchangeable. His ideas are great strength in the entire design, together with the utmost economy in operation and up-keep.

METZGER TO BUILD TRUCKS

It is rumored in Detroit that the Metzger Motor Car Company will in the near future engage in the production of commercial cars.

Paul Smith, formerly sales manager of the Studebaker corporation, has joined the Metzger forces as vice-president and sales manager and it is understood that he has influenced Indianapolis capital by reason of which the business will be conducted on a more pretentious scale than heretofore.

NEW FIVE-TON PACKARD

To round out its line of heavy duty vehicles, the Packard Motor Car Company is announcing a five-ton truck. This model is being placed on the market after ten thousand miles of testing, which follows eight years of experience with trucks of similar design. The new truck has been tried out under conditions more severe than those encountered in actual service.

The five-ton model is like the established three-ton Packard except that it has a more powerful motor and more massive construction. To insure the longevity of the vehicle, there is an automatic governor limiting the speed to eight and one-half miles an hour. The motor is 40 h. p., S. A. E. rating, with a bore of 5 in. and a stroke of 5½ in.

The wheelbase of the standard chassis is 14 ft. long, but there are optional sizes giving frame lengths behind the driver's seat from 12 to 16 ft. There are standard and optional bodies adapted to meet a wide range of requirements. The five-ton model will open a vast amount of new business to Packard trucks, which are now being used in 157 lines of trade.

FEDERAL RUBBER MANUFACTURING COMPANY EXPANDING

Federal Rubber Manufacturing Company, Milwaukee, Wis., which took over the Federal Rubber Company's plant last year, and has since increased the business from about 50 men to about 600 in one year, have given out contracts for two new buildings; a 6 story factory building, 100 x 400 ft. and a two story administration building, 70 x 90 ft. Byron C. Dowse, formerly President, Richard Ward, formerly Secretary and Treasurer, and Herbert Githens, formerly Sales Manager, all of the G. and J. Tire Company, now occupy the same positions in the Federal Company, Mr. Githens also being Vice President of the Company.

FURTHER GRAMM MOTOR TRUCK COMPANY DEVELOPMENTS

At a recent meeting of the directors of the Gramm Motor Truck Company, Lima, Ohio, B. A. Gramm's resignation as Vice President was accepted and Geo. W. Bennett, Vice President of the Willys-Overland Company, was elected to succeed him, the full list of the officers being John M. Willys, President and General Manager; Geo. W. Bennett, Vice President; James E. Kepperly, Secretary; Walter Stewart, Treasurer, and Henry L. Hook, Assistant General and Factory Manager. The factory force has been reorganized and the out-

put has already been almost doubled. The company plans to produce at least 2000 commercial cars during the coming year.

The sales department of the Gramm Motor Truck Company has been amalgamated with the Commercial Car Department of the Willys-Overland Company of Toledo. Chas. A. Neracher, who has recently been appointed consulting engineer of all of the Willys factories, will devote considerable time to the refinement of the Gramm commercial cars.

TO ASSEMBLE FORDS IN MILWAUKEE

It is announced that quarters have been secured in Milwaukee for an assembly plant of the Ford Motor Company of Detroit. It is stated that parts will be shipped by water from Detroit to Milwaukee and assembled there.

MERCHANT & EVANS COMPANY, Philadelphia, Pa., have arranged to move their tin and terne plate plants to a new purchase of ground at Glenova, W. Va., and will devote the buildings formerly occupied by this plant in Philadelphia, which have an area of 35,000 sq. ft. of floor space, to the manufacture of the Hele-Shaw clutch and transmissions, which are now being used on many commercial cars.

LOZIER MOTOR COMPANY, Detroit, Mich., have announced that they will abandon the manufacture of the five-ton truck, a number of which have been put out.

NEW FACTORIES AND TRUCKS

REMINGTON STANDARD MOTOR COMPANY, Farmington, N. Y., is building a new factory.

NYBERG AUTOMOBILE WORKS, Anderson, Ind., will erect two new buildings each 50 x 125 ft.

GENERAL MOTORS TRUCK COMPANY has moved its general offices from Detroit to its plant at Pontiac, Mich.

IDEAL COMMERCIAL CAR COMPANY, Detroit, Mich., is said to be building a large plant at South Railroad St., Akron, O.

MAIS MOTOR TRUCK COMPANY, Indianapolis, Ind., will erect a \$5000 one-story frame building, English Avenue and La Salle Street.

FIRESTONE TIRE & RUBBER COMPANY, Akron, O., new two-story building, N. W. Cor. Crompton & Locust Sts., is about completed.

VELIE MOTOR VEHICLE COMPANY, Moline, Ill., have built a separate factory for the manufacture of Velie commercial cars at 25th Street.

FOUR WHEEL DRIVE AUTO COMPANY, Clintonville, Wis., is seeking a new location with better facilities, and will probably move to Appleton, Wis.

CENTURY ELECTRIC MOTOR VEHICLE COMPANY, Detroit, Mich., will erect a new factory near the plant of the Burroughs Adding Machine Company.

MAIS MOTOR TRUCK COMPANY, Indianapolis, Ind., are building an addition to their plant, which will give them 20,000 sq. ft. of additional floor space.

JOLIET AUTO TRUCK COMPANY, Joliet, Ill., has changed its name to the Joliet Auto Tire Company, and has increased its capital stock from \$10,000 to \$75,000.

FEDERAL MOTOR TRUCK COMPANY, Detroit, Mich., have bought the buildings and land formerly occupied by the Vandyke Motor Car Company, on Leavitt Avenue.

GENERAL MOTORS TRUCK COMPANY, Detroit, Mich., have brought out a new automatic dumping body, which is especially adaptable for carrying sand, gravel, crushed rock and asphalt.

FORD MOTOR COMPANY, Detroit, Mich., has purchased two acres at E. 11th and Division Streets, Portland, Ore., on which will be constructed a \$250,000 assembling plant and service station.

KELLY MOTOR TRUCK COMPANY, Springfield, O., are bringing out a new truck in which a water-cooled engine replaces the air-cooled engine which has distinguished all of their products heretofore.

CROXTON MOTOR COMPANY, of Cleveland, O., makers of the Croxton Taxicabs, are building a plant 120 x 150 ft. at Washington, Pa., and will move to this new location on the completion of the plant.

TATE ELECTRICS, LTD., a Canadian corporation, has secured a factory at Windsor, Ontario, opposite Detroit for the production of electric trucks and pleasure cars. E. A. Everett, of Detroit, is Manager of the company.

HAYNES AUTOMOBILE COMPANY, Kokomo, Ind., have leased an additional building at 57 E. 16th St., Chicago, Ill., which it is stated will be used for the future display of delivery cars which this company expects to make.

BUCKLEN AUTO TRUCK COMPANY, Elkhart, Ind., has acquired the factory formerly occupied by the Elkhart Wrench Company, and is remodeling it and equipping it with machinery for the production of Bucklen commercial cars.

MUNCIE GEAR WORKS, Muncie, Ind., has commenced the construction of a new factory building to be of concrete blocks and steel. This plant will be classed as one of the best in the country for making transmissions, gears, etc.

THE SEWELL CUSHION WHEEL COMPANY, 100 Griswold Street, Detroit, Mich., has increased its capital stock from \$60,000 to \$300,000, and has moved into a new factory with greatly increased facilities for the manufacture of its cushion wheels.

SPARKS-WITHINGTON COMPANY, Jackson, Mich., well known makers of sheet metal parts, have just doubled the size of their plant, the addition being of steel and concrete daylight construction, all machines having individual electric motor drive.

B. W. VITCH COMPANY, Jersey City, N. J., will establish a large plant for the manufacture of commercial cars at Dayton, O., where they have purchased 4½ acres of land on the Big Four Railroad, near the plant of the Speedwell Motor Car Company.

REO MOTOR CAR COMPANY, Lansing, Mich., makers of Reo commercial and pleasure cars, has placed contracts for two large new buildings, one 80 x 500 ft., and the other 54 x 500 ft. This indicates a considerable expansion in the manufacture of Reo products.

BAKER MOTOR VEHICLE COMPANY, Cleveland, O., makers of the Baker electric cars, have formed a company for the manufacture of their well known vehicles at Walkerville, Ont. The new company is capitalized at \$100,000, and will be known as the Baker Motor Vehicle Company of Canada.

SEAMLESS PRESSED STEEL MANUFACTURING COMPANY, Redkey, Ind., manufacturers of automobile trucks, is planning to build a new factory at Hartford City, Ind., with a capacity of one truck a day, which would furnish employment to about 100 men, provided a sufficient amount of stock is subscribed by Hartford City People.

W. DEARNOLD, formerly with the Rassel Motor Car Company, of Toledo, is organizing a new company for the manufacture of commercial cars, which will be styled the DeArnold Manufacturing Company. An effort had been made to acquire the Rassel plant, but this has been abandoned, and a new plant entirely will be established.

CENTURY ELECTRIC CAR COMPANY, Detroit, Mich., has been capitalized at \$100,000, and has elected the following officers. President, John Wynn, Jr.; Vice-President, Chas. L. Weeks; Secretary and Treasurer, Edw. Atkins; General Manager, John B. Gillespie; Additional Directors, Wm. A. Jackson, Phillip Dreitmeyer and Howard Streiter.

CHASE MOTOR TRUCK COMPANY, Syracuse, N. Y., have added a new light delivery wagon which lists at \$500 to their line. This is equipped with a two-cylinder, two-cycle air-cooled motor instead of three-cylinder motor, by which their other models are identified. The motor will be of 12 h. p., the cylinders being 4 x 4½. The change speed gear is of the planetary type.

GENERAL INDUSTRIAL & MANUFACTURING COMPANY, Indianapolis, Ind., whose organization was noted some months since, has purchased the Industrial Building, at Canal and 10th Streets, Indianapolis, Ind., for \$350,000. This building has 380,000 square feet of floor space, and is occupied by a number of manufacturing concerns. The General Company will soon have its line of commercial cars ready for the market.

J. W. PARSONS MANUFACTURING COMPANY, Newton, Ia., are embarking in the manufacture of commercial motor cars, and a selling organization is being formed under the name of the Universal Motor Truck Company, to sell the output of Parsons commercial cars. Wm. M. Simpson, of Chicago, Ill., and James K. Risk, of Lafayette, Ind., are named as the organizers of the selling company.

ATLANTIC VEHICLE COMPANY, the new company, the formation of which was recently noticed in these columns as starting to manufacture an electric commercial car, has absorbed the Royal Machine Company, of Newark, N. J., thereby acquiring its factory, which is well equipped and has a good factory organization. This enables the Atlantic Company to start out manufacturing its cars without the usual delay caused by establishing a new factory.

HENRY LEE POWER COMPANY, Chicago, Ill., makers of the Old Reliable truck, have just completed a new lumber truck, which has a standard stake body, 15½ ft. long by 6 ft. in width, of the removable type. Two extra bodies are also furnished with this truck. Rollers in the platform of the body make the changing of the bodies when loaded comparatively easy, and also expedites the dumping of the load. Racks are also furnished on each side of the body, capable of holding lumber 24 ft. in length. The wheel base of this truck is 144 in., and it was made for the Mears-Slayton Lumber Company of Chicago.

BUSINESS TROUBLES

PONTIAC WHEEL COMPANY, Pontiac, Mich., has gone into bankruptcy, and its plant is offered for sale.

The Creditors' Committee in charge of the affairs of the Grabowsky Power Wagon Company, have paid a dividend of 10% to the creditors.

CORTLAND MOTOR WAGON COMPANY, Pittsfield, Mass., in bankruptcy, motion to sell its assets was opposed by holders of mortgages and other liens who seek to have their claims enforced ahead of other debts.

DENNISTON COMPANY, Buffalo, N. Y., has filed a voluntary petition in bankruptcy; liabilities are \$65,745.94, and assets, \$99,636. Ed. J. Barcale has been appointed receiver, with authority to continue the business for thirty days. It is said that this embarrassment was brought about because E. E. Denniston, president of the company, refused to put his concern in the new Buffalo Electric Vehicle recently formed.

AMERICAN MOTOR TRUCK COMPANY, Lockport, N. Y., one of the constituent companies of the Ewing-American Motor Company, which is now in bankruptcy, has been sued by Flattow, Flynn & Company, N. Y. City, who claim that their contract with the above Company to represent them in New York was cancelled without their consent, causing them to lose the contract with the New York Mail Company, etc.

OWEN MOTOR CAR COMPANY, Detroit, Mich., has brought suit against the Reo Motor Truck Company, of Lansing, Mich., for \$330,000 alleged to be due for the automobile parts purchased by the Reo Company at the time they purchased the plant of the Owen Motor Car Company. When this deal was consummated the Reo company agreed to purchase and pay for all of the parts on hand which they could make use of. The Reo claims that it found the Owen car to be unsatisfactory, and therefore could not use the aforesaid parts.

PERSONAL MENTION

W. H. LALLEY has been appointed manager of the foreign sales department of the Studebaker Corporation.

E. W. ARBOGAST has been appointed manager of the commercial car division of the Studebaker Corporation's Chicago branch.

C. J. REYNOLDS, Detroit, Mich., has been appointed purchasing agent of the Studebaker Corporation, succeeding F. A. Wade, who resigned.

C. C. MCKINNEY, formerly with Power Wagon and the Commercial Vehicle, is now with the Chicago branch of the Dayton Auto Truck Company.

W. S. PETTIT, formerly assistant advertising manager of the Studebaker Corporation, has been made advertising manager to succeed E. LeRoy Pelletier. Paul Brus'e will continue to act as publicity manager.

H. G. BRUNING has been placed in charge of the Motor Truck Tire Department of the Cleveland, O., branch of the Goodyear Tire & Rubber Company.

M. L. PULCHER, of the Federal Motor Truck Company, Detroit, Mich., has been elected to membership in the National Association of Automobile Manufacturers.

CHAS. GORDON has been promoted from Superintendent of the Studebaker Corporation's Axle Factory, to the position of factory manager, succeeding Chas. Adams.

H. P. JAMES has succeeded S. Williams as Vice President, Sales Manager and Purchasing Agent for the Crown Commercial Car Company, N. Milwaukee, Wis.

J. L. DAVIDSON, formerly with the Mais Motor Truck Company, has accepted a position as superintendent of the Universal Truck Company at Detroit, Mich.

KARL PROBST, formerly of the Lozier Peerless and Seagrave companies, has been appointed general manager of the Kanawha Auto Truck Company, Charleston, W. Va.

W. B. HURLBURT, formerly with the Packard, Thomas and Pennsylvania companies, has been appointed sales manager for the Bergdoll Motor Car Company, Philadelphia.

ARTHUR I. PHILP, formerly of the Morgan & Wright and United States Tire Companies, has been appointed assistant sales manager of the Studebaker Corporation, Detroit, Mich.

D. E. BUCKLEY, formerly with the Abbott Motor Company, is now sales manager for Pratt, Carter & Sigsbee, Detroit, Mich., manufacturers of the Wolverine commercial cars.

F. H. FINDLAY, of the Goodyear Tire & Rubber Company's New York branch, has been placed in charge of the Motor Truck Tire Department of the Brooklyn branch of the same company.

E. LEROY PELLETIER has resigned his position as advertising manager of the Studebaker Corporation, and will in the future devote his entire time to the interest of the Flanders organizations.

C. F. REDDEN, formerly New York City manager for the Studebaker Corporation, has resigned to take the New York and New England Sales Managership of the Everitt Motor Car Company.

WILBUR F. REYNOLDS, sales manager of the Lippard-Stewart Motor Car Company, Buffalo, N. Y., has assumed the duties of advertising manager in connection with his supervision of the sales department.

JAMES E. BAYLISS, formerly with the San Francisco branch of the Reo Company, is now in charge of the com-

mercial car department of Metzger-Herrington Company, Chicago, Ill., distributors of Argo Electrics.

CARL A. NERACHER, for several years chief engineer of the Garford Company, Elyria, O., has been appointed consulting engineer of all of the Willys factories. This does not interfere with the positions of Fred L. Tone, chief engineer of the Overland plant, and F. Biszantz, engineer of the Gramm Motor Truck Company, as these gentlemen will retain their positions as at present.

L. E. ROBERTS, formerly sales manager for the Computing Scales Company, of Dayton, O., has been appointed President of the Ware Motor Vehicle Company, of St. Paul, which company will manufacture a four wheel drive commercial car in a greatly enlarged factory.

ARTHUR PERLITZ, of Hartford, Conn., has resigned from the sales department of the Electric Vehicle Company division of the United States Motor Company and goes to Chicago in the interests of the Locomobile branch there. Mr. Perlitz was formerly with the Locomobile Company at Chicago.

JOHN A. CLEARY, automobile and yachting editor of The Philadelphia Inquirer for the past five years, and former editor of an aeronautical publication, has resigned from the former paper to become manager of the automobile advertising and news department of The Evening Telegraph, of the same city.

BERRY ROCKWELL has been appointed advertising manager for the United States Motor Company, succeeding Gridley Adams, resigned. Mr. Rockwell was formerly advertising manager for the Maxwell-Briscoe Motor Company, and in charge of the Maxwell division of the United States Motor Company. He will now have charge of the advertising of the entire company, including Sampson commercial cars.

SHANKS NOW KELLY WESTERN MANAGER

Chas. B. Shanks, well known in the motor truck and automobile trade, has succeeded to the position of western manager for the Kelly Motor Truck Company's interests, where this company is starting an aggressive campaign. He will have direct charge of all business in California, Oregon, Washington, Idaho, Montana, Nevada, Utah, Arizona and New Mexico.

A branch will be opened in San Francisco from which distribution will be made throughout the states above mentioned. Except in San Francisco, Mr. Shanks will establish agencies for the sale of Kelly products. He is most enthusiastic over the new Kelly models and is anxious to get into communication with every motor truck dealer, as well as prospective dealers, in every sales district throughout his territory. His temporary address is Room 621, Monadnock Building, San Francisco.



CHAS. B. SHANKS

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SANITARY AUTOMOBILE STREET CLEANING



THE advent of the automobile has brought about more sanitary conditions in the streets of our large cities, and there is a growing tendency towards the use of automobile street-cleaning apparatus. These machines, however, are usually but a single step in advance of horse apparatus.

It seems very difficult for the designer to take more than one step at a time. In other words, the machines are practically horse-drawn street cleaners converted so that they are propelled by gasoline engines. Aside from this there is no great change, the machines being almost identical with those formerly used with horses. The great difficulty with the ordinary street cleaning apparatus is the fact that it simply distributes the dust, sweeping it from one point to another, gradually accumulating the major portion of it at the edge of the street where it is taken up in due course of time (frequently this is a good while after the sweepers have gathered it), by a series of carts and men with shovels. This, of course, allows very much dust to be swept to other portions of the street and even back onto the part which has been cleaned.

It would seem that, with the modern vacuum cleaner perfected to the point it has now reached, that combination machines would be on the market which would not only sweep the dirt from the street but at the same time force this dirt into a receiver from which it could be carried by suction and deposited in a tank. Thus in one operation the street could not only be cleaned but the refuse carried away without the very great expense now incurred by a large number of horses, wagons and men. A few such machines, traveling continuously at a speed of from 8 to 10 miles an hour, and preceded by automobile sprinkling carts, could cover a vast area, much greater than is now covered by an army of horses, wagons and ordinary sweepers. At the same time the improvement in the street conditions and in the sanitary conditions would be very great.

In Paris, where the automobile has perhaps held sway for a longer period than in any other city in the world, automobile street cleaning apparatus has advanced to a considerable degree, but even here the same tendency of one step at a time is noticeable and the designs show unmistakable evidence of copying after those already in existence and in use for the past fifty years.

These machines are of the nature of sprinkling carts, sweeping machines and wagons for gathering the dirt and dumping it. Each of these is a distinct type, none of them being combined into a single machine. This, however, can be done and the time is ripe for some company, already connected with this line of work, to put on the market a combination sweeper with a vacuum cleaner, the compartment carrying the dirt being so arranged that it can be automatically dumped without stopping the machine.

TRUCK SPEEDS THE BONE OF CONTENTION

How fast shall the motor truck be driven is the much mooted question. Everybody seems to have an opinion on the subject but, unfortunately, these opinions vary by some 20 miles per hour. The Society of Automobile Engineers finally arranged a schedule of proper truck speeds, giving a 1-ton truck a maximum of 5 miles an hour, a 2-ton machine 13 miles, and a 3-ton truck only 11 miles. For the larger sizes 10 miles is the maximum for a 4-ton truck and 8 miles for a 6-ton truck. The highest speed given was 16 miles an hour for a $\frac{1}{2}$ -ton delivery wagon. But what are the actual conditions in the commercial world as to the maximum speed of the truck? A few brief conversations with drivers quickly brings to light the fact that they do not know anything at all as to the maximum speed limits set by the engineers, the manufacturers, the owner, or anybody else for that matter. When in a hurry they simply open her up wide and don't even take the trouble to find out what speed they are making. They are happy in the fact that they are getting over the ground just as fast as the "old hearse" will travel.

Governors have been tried with more or less success, probably less. We do not care to say that governors are a failure, because governors can be constructed that will operate properly, but as far as one can see, it is only a question of time with the ordinary driver before the governor is out of business and the driver is no longer hampered by any such "fool device." Some of the governors after considerable use are broken or get out of adjustment, and either, owing to lack of time or on account of pressure brought to bear on the repair department, the governor is not put back into running order.

The writer recently, in course of conversation with a driver of a 3-ton truck, elicited the fact that this truck was often driven close to 30 miles an hour with the governor on. Some further questioning brought out, that at high speeds by a certain manipulating of the throttle, the governor could be stuck so that it would not act until very slow speeds were again reached. While in this condition the speed of the truck was limited only by the revolutions, and power of the engine.

If 3-ton trucks are driven at this rate, light delivery wagons and vehicles on pneumatic tires are commonly driven at speeds of 25 to 35 miles an hour, and nothing is thought of it. Alarms have been suggested as a remedy. But of what use is an alarm when the driver intentionally ignores it? As well ring an alarm clock on one who does not intend to get up, the only result is, damage to the alarm clock.

There seems to be but one method which can be depended upon, and that is a sealed recording instrument, the record of which is periodically brought to the attention of the owner or the man in charge of the vehicles. Combined with such a device an alarm, set to warn at a speed slightly below the maximum allowable, might be of some avail.

The drivers, however, are by no means the only culprits, as the owners, all too often ignorant of the results, are perfectly willing to have the machine driven at its highest possible speed, in order to get more work out of it. It then becomes a problem for the manufacturer to solve. If the speed of the truck must be kept down to the limits above suggested, perhaps the annulment of the guarantee on parts and replacements, when excessive speeds are indulged in, may have some effect. It is certain that excessive speeds on solid tires are most destructive, and the work done by the truck is dearly paid for by that individual or company, when speed recommendations are entirely disregarded.

There is still another phase of this problem to be considered, and that is the use of pneumatic tires. Each year sees more and heavier trucks driven on air, and, although expensive as to tires, the over-speeding has not been so destructive to the mechanism. Perhaps the tire makers may materially assist in the solution of this problem by supplying pneumatics which will be serviceable and at a price which will not be prohibitive, thus making possible high speeds. However, under the present conditions there seems to be but one way to keep the driver and owner within bounds, and that is to revoke the entire guarantee on any machine driven beyond the allowable limit, as has just been recommended by the N.A.A.M.

MANY COMMERCIAL CAR ADVANTAGES OTHER THAN ECONOMY

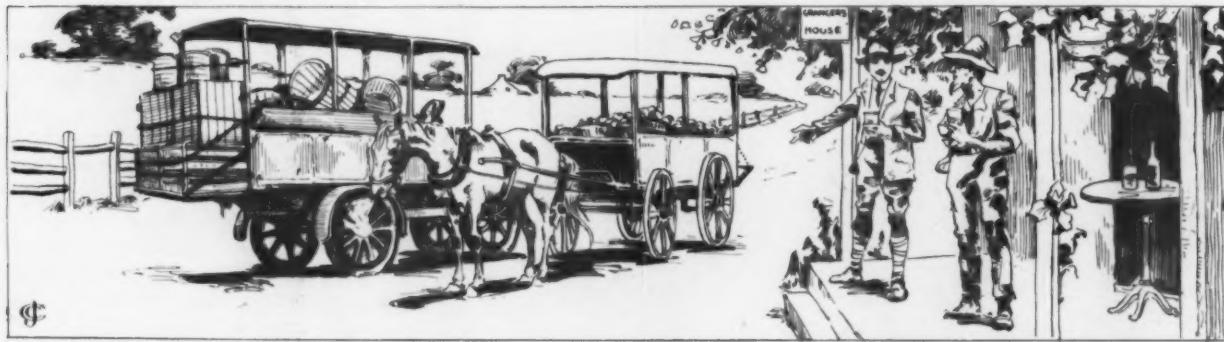


much has been said on the subject of the comparative cost of transportation of goods by horses and by commercial cars that many have lost sight of the very important fact that a train of decided advantages accompany the use of motor driven delivery wagons that do not exist in connection with the use of horses.

The advantages we refer to are delivery of goods shortly after their purchase, as compared to receiving the same goods late at night, when one perhaps has to be awakened from sleep in order to receive them; increased satisfaction of customers, ability to make steamboat landings and railroad stations in time, long distance hauling without relays or without the expense of hotels and board of several men; prompt service in either snow and ice or the heat of summer, neither affecting the truck as it does the horse; smaller space for garaging without the unsanitary and disagreeable odors of the stable. These features make it possible to have the cars near the main business in the center of the city, while the horses occupying a large amount of room have to be garaged at a distance. The space over the garage can be used for offices or any purpose for which any building can be used, while the space above a stable is unfit for office purposes. These considerations must not be lost sight of in the too close scrutiny of the ledger.

On the cost side, however, there are several items to be considered. The time was not so very many years ago that there was a grave question as to actual economy of the motor driven vehicle over the horse; to-day there are but very few conditions under which the commercial car cannot show a decided saving. With hay at \$20 to \$22 a ton and the cost of grain correspondingly high, with the horse subject to sickness, broken legs and heat prostration and with general cost of upkeep increasing, there is no longer much doubt as to the ultimate choice of every far-seeing business man. The world's hauling is certain to be done by power, why cling to a forlorn hope?

The editors of the "C. C. J." are not looking for trouble, but if **YOU** are in trouble, and want information regarding anything pertaining to the industry, or to the trucks you are using, etc., etc., write to the Editorial Department of the "C. C. J.," Forty-ninth and Market Streets, Philadelphia, Pa. All communications of interest to readers will be cheerfully answered through the reading columns of the paper.



Hayseed:—You must have started pretty early to be getting back already; I started at 3 o'clock myself.

Up-to-date Farmer:—Oh, no! I didn't get up 'til 4, but I'll be home and hauling a load of feed before you get to town.

Use of Commercial Cars by Transfer and Express Companies

A Proof That Goods Can Be Moved Cheaper by Power Than by Horse

BY E. S. FOLJAMBE



N the crowded wholesale districts of both New York and Philadelphia, the congestion of traffic due to the large amount of space now occupied by horses and wagons is very noticeable. Take for example, the lower end of Reed Street, New York. A dozen times a day the traffic is absolutely at a standstill and wagons stand facing each other for fifteen, twenty and thirty minutes at a time in the narrow lane between the wagons backed to the curb. This is partly due to the obstancy of the drivers and partly because it is very difficult to back a loaded wagon any distance in this mass of horses and wagons, without injuring other horses and getting into a fight with their drivers. Each wagon backed to the curb

entire traffic was blocked for some time and the horse was apparently so injured that he would not be fit for service for several weeks.

It is but a question of time when these conditions will all be changed. Trucks will be the rule, not the exception. Each firm will have its regular loading devices such as slides, special platforms, cranes, etc.

In this article has been gathered together numerous instances of the successful rise of motor trucks for general hauling. Of all those approached there was not one voiced any dissatisfaction.

Suburban and interurban hauling has become an established business as carried on by motor trucks; the railways



A Blockade in New York

This picture shows what happens many times a day every day in the year, in the wholesale district of New York. Traffic absolutely at a standstill owing to the unnecessary space occupied by the horses and wagons. One-half as many trucks are capable of doing more work than all these wagons and there would be absolutely no congestion whatever of the traffic.

with its horse or horses turned off at a right angle to it, occupies as much space as two good sized trucks. If the wholesale houses in this district used trucks, a few of them have already adopted them, there would be no delays or congestion whatever in this section. These conditions prevail in the wholesale districts of many cities.

In Philadelphia recently the writer noticed the methods adopted by a teamster in retaliation against another teamster who had blockaded his passage. Deliberately driving over the sidewalk he caught the front wheel of his adversary's cart with the rear wheel of his own, which instantly threw the horse from his footing and landed him with his legs through the spokes of a standing motor truck. For a few moments before he could be held by the head there was grave danger of his breaking a leg, which would have meant a loss of \$250 or \$300 to the owner. Such tricks are common among the drivers and have no parallel in commercial car performance. The



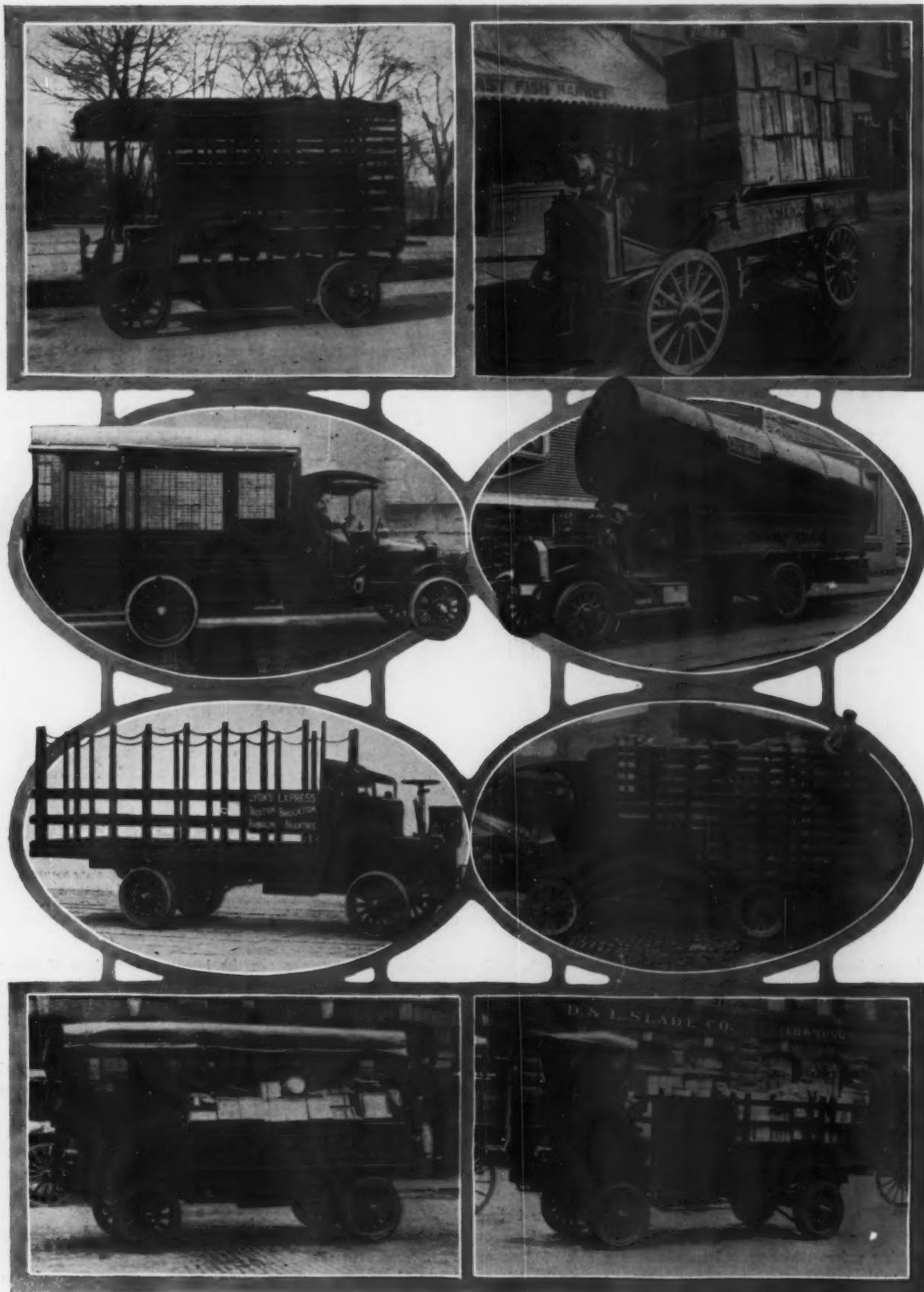
Result of Blockaded Traffic

This photo represents the result of a rather profane conversation between two horse drivers, one of whom blocked the other's passage. The horse here shown was deliberately thrown by one expressman by catching the front wheel of the wagon to which the horse was attached, with the rear wheel of his heavier vehicle.

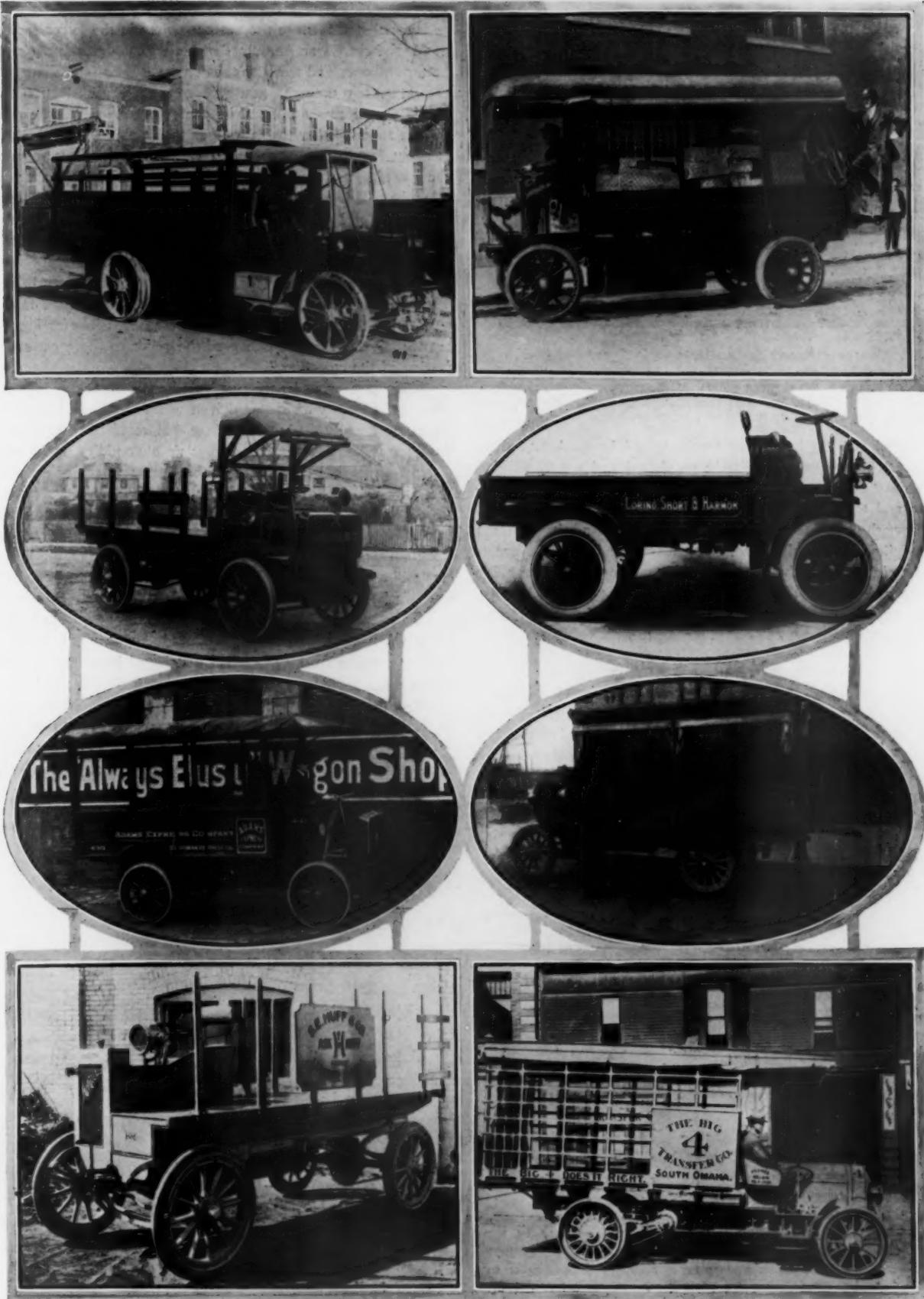
and express companies are the losers. This class of motor transportation is now increasing enormously and in the next few years established companies are going to reap a harvest.

Green's Auto Van and Express Company

An interesting story of how one express company adopted motor trucks is that of the Green's Auto Van and Express Company, 178th Street and Morris Park Avenue, New York City. This company does a general express business hauling to all parts of the city of New York and suburbs. Horses were used exclusively until in January, 1910, when a disastrous fire occurred which completely destroyed the stables, horses and wagons. The business was prostrated until a couple of large trucks were obtained from a friend and put in rush service to take care of the business that was already booked. The work of these two machines was a revelation to the company and then and there it was decided that from that



Gasoline and Electric Trucks in Transfer and Express Service



Various Types of Bodies Used in Express Service



Ready for an Uptown Delivery

One of Green's auto vans, used in general expressing and country moving, after taking on a load at the lower end of the city for delivery to various points in upper Manhattan. This particular machine is already five years old and running as well as ever.

time on nothing but motor trucks would be used, and three large trucks were immediately purchased and put in service. The first two have now been in use since two years ago January and the third was purchased two years ago last March. Although one of these machines was second hand, it is making its daily mileage with absolute regularity and with the greatest satisfaction to the owners. This machine is now over five years old and the driver says that during a period of twenty-two months, covering all kinds of weather and for all causes, it has only been out of service ten days.

Long Hauls a Specialty

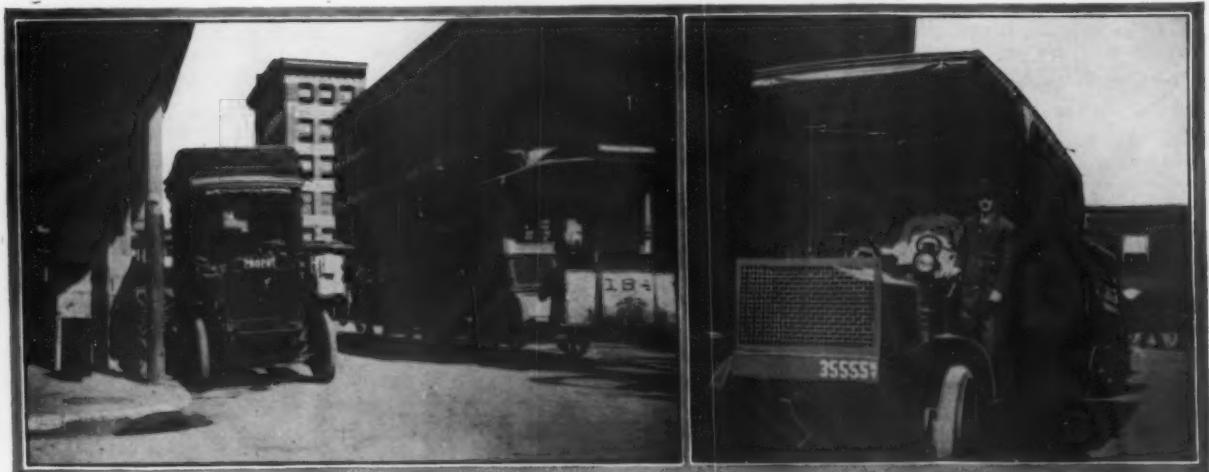
The company is now making long hauls a specialty. Country moving, piano and furniture moving, etc., is the chief work on which the trucks are now used. When asked what constituted a day's work, the driver said, "Well, to-day I have made one trip of about thirty to thirty-five miles using a half gallon of oil and between seven and eight gallons of gas. I

took on goods on my out-going trip from the depot up town and distributed them to the various points in the lower section of Manhattan. I am now loading up with four to five tons of butter and eggs and will also take on some laces for delivery on the return trip uptown." In an accompanying illustration this car is shown ready to start on the return trip. "Some days I make runs to other towns such as to Riverdale, Conn., which is about forty miles one way. I will get away about 10:30 in the morning and be back at the garage before ten or eleven at night. This would be about a three days' trip for horses. Last January I drove to Lakewood, N. J., with a heavy load of furniture. The weather was something fierce. This trip was about sixty miles one way. At one place I spent nine hours in poking my way for three miles through snow banks. The snow was over the frame of the machine. We had to dig a track for each wheel. Conditions were impossible for horses, but we got through and delivered the goods to the great satisfaction of the customer."

This is a typical performance of what is being done by many companies with motor driven vehicles. These long trips were occasionally made with horses, but required a relay, and the man and animals had to be put up over night, which was a great expense. Furthermore, the horses after such a trip had to be laid off for at least a day to get back in shape again.

In another cut is shown an interesting picture of the Mais truck, of the Manhattan & Bronx Trucking Company, New York City, and in the same view can be seen one of the horse cars still operating in the Metropolis, thus ancient and modern methods have been brought together in this photo.

This truck is of $2\frac{1}{2}$ tons capacity and has now been in use about six months. It averages from 30 to 40 miles per day hauling produce from the market district of lower New York to the uptown stores as far north as 177th Street. This one machine has taken the place of five horses or two two-horse teams with one horse in reserve, as is necessary in this class of work. The driver makes anywhere from 70 to as high as 160 stops in a day, which is rather an unusual performance for a gas truck.



Ancient and Modern Methods in New York

This shows a large Mais truck used in express delivery by the Manhattan and Bronx Trucking Company, New York. The contrast of ancient and modern is strongly brought out by the passing of an antiquated horse car, a line of which is still running in our Metropolis.

Improvised Radiator Protection

This large truck is used by Winkler's New York and Rockaway Express and makes trips regularly between New York and distant points on Long Island. In the crowded sections some protection for the radiator has been found necessary; the picture shows the form of device used. It consists of a heavy iron framework laced with quarter-inch wires.

Winkler's New York and Rockaway Express

Any day down at 220 Duane Street, New York City, in the heart of the wholesale district, may be seen the trucks of Winkler's New York and Rockaway Express being loaded with goods for distant points on Long Island, such as Woodmere, Cedarhurst, Edgemere, Rockaway Beach, and even Far Rockaway. These two $3\frac{1}{2}$ ton trucks average each about seventy-five miles a day and might be said to run on schedule, so regular are their trips.

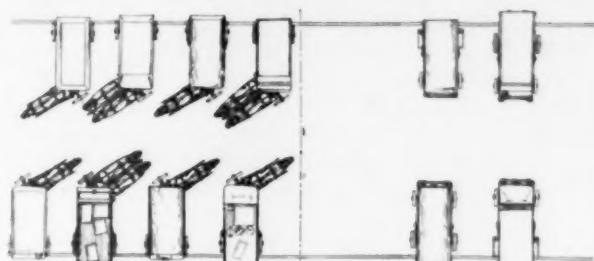


Diagram Showing Advantages of Trucks

At the left is shown a number of wagons, each taking up twice as much space as a truck. At the right are shown trucks which will do the same work. There is plenty of room and no congestion of traffic.

Before these cars were put in service the work of each car was done by two two-horse vans and five to six horses. Relay stables were maintained at Jamaica and of course men, horses, and the entire equipment had to be kept up at this point, which is not now necessary on account of the speed and distance possibilities of the motor trucks.

Radiator Protection

The photograph of this truck shows a novel arrangement put on by the owners to protect the radiator. This consists of a very heavy wire screen with iron framework. The wires are about $\frac{1}{4}$ in. in diameter. It has been found that in these down-town sections teamsters in front are very apt to back up and damage the radiator unless protected in some such manner. It would seem advisable for truck manufacturers or agents to be able to supply upon request such radiator protectors for all machines which are used in this class of service.

Each Displaces Four to Seven Teams

The Ames Transfer Company, 236th Street and Broadway, New York, uses two 5-ton Pierce-Arrow trucks for hauling crushed stone, cement, bricks, sand and builders' supplies. These trucks are worm driven, being the largest worm driven trucks made in the United States. The company states, "Each truck on good roads will do the work of approximately four teams on distances up to two miles, and for longer hauls the work of six or seven teams. The longer the haul the better the showing over horse-drawn trucks, and in all cases the loading and unloading must be done rapidly. We are still working eight head of mules and the earnings compare as before stated in proportion to the number of horse or mule teams that the auto does the work of. The motor trucks have broadened our field to the extent that we can now sell to points that formerly were out of our range."

Louis L. Firuski, 37 Flatbush Avenue, Brooklyn, N. Y., employs ten motor trucks, ranging in capacity from 3 up to $4\frac{1}{2}$ tons. These are confined entirely to long hauls. Mr.

Firuski says, "As we have not as yet relied on horses and wagons for this particular work, we have practically opened up a new department in our business in that direction. We still employ forty horses. I hardly think our trucks are doing anything out of the ordinary, other than to make long hauls which we could not do with horses at all. Our longest run thus far has been about one hundred miles one way or two hundred miles for the round trip. Naturally the introduction of the motor van is broadening our field in this particular line." This company is using both Mack and Commer trucks.

Satisfactory and Profitable

Still another user, the D. A. Morr Transfer and Storage Company, of hilly Kansas City, is using Packard and Grabowsky trucks and seems to be well pleased with results. The first 3-ton truck was put in service a little over two years ago and the second about one year and a half ago. When asked how they were getting along, they made the following statement: "We are using two of these trucks in the van service and the third as a general freight and delivery proposition. They have given very satisfactory service. A 3-ton truck has displaced on the average, four of our ordinary horse trucks. Of course we prefer the long hauls for this truck and our experience has been, the longer the haul the more profitable, with a power truck. However, one of our trucks is being used in the general delivery proposition and has been taking long and short hauls, just the same as we would give to any of our teams, and same has been very satisfactory and profitable."

Alsover Express

Another typical example of motor express service is that of the Alsover express, Lawrence and Vine Streets, Philadelphia, Pa. E. E. Alsover is a great believer in motor delivery. About April, 1910, at which time he was using forty horses, he purchased an Autocar. The performance of this car was so satisfactory that in November, 1911, a large Packard was put in service, and at the present time he is operating some six machines, including two three-ton models, two medium sized cars and a two-ton G. M. C. gas truck. This was probably the first express company in Philadelphia to use commercial cars and has been a pioneer ever since in adopting up-to-date features connected with motor delivery service.

Mr. Alsover was led to use commercial cars owing to the annoyances connected with the use of horses, such as lameness and petty troubles, to say nothing of heat strokes in the summer and the difficulties of operating through snow in the winter. In his own words, he became disgusted with horses in the winter, and since using the trucks has had first-class results. He believes in keeping the machines continuously on the go and uses the light cars mostly for long hauls and the heavier cars for work between the railroads and the central routing station, which is at Lawrence and Vine Streets. Some of the largest machines, however, are sent on long trips when necessary.

Mr. Alsover remarked as one of the large trucks drove up, about eleven o'clock in the morning, "that car has already hauled a carload of paper from the railroad to the warehouse of the A. P. W. Paper Company, a distance of about a mile, in four loads. It will now haul a load from the wharf up to the central office and about 3:00 or 3:30 will start on an afternoon trip to Germantown, a long haul, and will do as much from that time until night, as two two-horse teams formerly did in

a whole day. It will make anywhere from forty to eighty stops and get back to the garage in the neighborhood of 6.30 to 7.00 o'clock."

A Typical Day's Work

One of the small machines as a typical day's performance will leave the garage at 49th and Chestnut Streets at about 8.10 in the morning and go to the railroad freight stations in the northern part of the city. From here it will bring a load to the central office, where all the goods which are to be delivered on routes are collected, and will take on a load for Chestnut Hill, Tioga, and Germantown, making the run north, a distance of some twelve miles. It will then return and be loaded for South, West Philadelphia and Darby, covering in all a distance of some fifty-six miles and making from sixty to eighty stops. It will reach the garage in the evening about 6.55.

This company makes a specialty of hauling for wholesale grocers, coffee houses, drug houses, etc., delivering to retail stores. The catalogues of the well known mail order house, Sears-Roebuck, of Chicago, are delivered by train in cases and the trucks then distribute them to the individuals. Large hardware houses and drug houses of New York ship goods to Philadelphia in carload lots to be distributed by the trucks to the retailers. The trucks meet the railroad cars, the goods having been shipped by freight, and with large shipments take the goods direct to their destination, getting them there in less time it is claimed than can be done when the goods are handled by express companies by horses, and at about one-third the cost. A notable case of this is the well known Park-Davis Wholesale Drug House, of New York, whose goods are now shipped by freight and delivered by the Alsover trucks to the retail drug stores, hospitals, etc., in and around Philadelphia. This work was formerly done by the express companies, but took considerably longer. The goods now leave New York one night, arrive in Philadelphia the next morning, and are delivered that same day even to distant suburban points.

The horse equipment has been cut down to sixteen, and a very great increase in the volume of business has resulted from

the use of trucks, this increase being estimated at from thirty-three to thirty-five per cent. The horses are now used mostly for picking up goods in the central portion of the city where stops have to be made every 100 ft. or so.

In shipping large quantities in this way, not only is time saved but the expense is much less. For example, twenty-five cases arrived during the course of the conversation, and these Mr. Alsover stated cost but \$1.98 for the lot, while by freight and when they were consigned separately, each case would have cost a quarter, or \$6.25.

Every Little Movement Has a Meaning

An interesting feature of this installation is the use of the International Recording Instruments on each of the trucks, these being furnished by the Philadelphia Delivery Supervision Company, which loans out the instruments and supplies a service at 12½ cents per car per day. Each night the instruments are opened and the strip of tape removed by an employee, and during the night the records are worked out completely by the Delivery Supervision Company, and the results reach the truck owner by the first mail in the morning, showing him exactly the speed, the number and duration of stops, in fact, everything that the truck has done on the previous day. By this means it is possible to know exactly what each truck and driver has accomplished. If stops have been too long at any one place the record will show it. The writer was shown one record which had been produced in court as witness that the driver in question was not speeding for any distance as was alleged by an officer. This resulted in a fine being remitted which would otherwise have had to be paid. Overspeeding is not indulged in when the drivers know that every movement of the machine is known to his employer.

Unfortunately, no definite record of the cost of operation is kept. When asked what effect the weather had and what he would do without trucks, Mr. Alsover remarked that he guessed he would have gone crazy last winter if it had not been for the motor trucks. Without them he would have been helpless and incapable of handling the business, but the trucks went their long routes just as in summer, but of course were

(Continued on Page 50)



A Pioneer Truck User

Some of the Alsover express trucks now operating in Philadelphia. This is said to be the first local express company to use motor-driven wagons

Lumber Dealers Making Extensive Use of Commercial Cars

Examples of the Work Accomplished by Motor Trucks Where Horses Fail

IN THE field of heavy hauling perhaps no class of business is more largely represented than the lumber dealers. Heavy loads, bulky, cumbersome loads are the rule and not the exception. It has been said that motor-driven vehicles of high initial cost could not be economically employed by such firms, owing to the amount of time that such an expensive equipment must necessarily lie idle while loading.

The time occupied in placing a load on the old horse-drawn lumber wagon was never thought of as a waste, nor did the temporary idleness of the horse and wagon strike the officials as an inefficient method. In fact, the horses required

In the few instances here cited some of the methods by which economy is obtained, are quoted.

Portable Loading Platform

One plan in use with Sampson trucks involves the use of portable loading platforms, having two wheels in the rear and a wooden horse in the front, making the forward end a trifle higher than the rear. The truck itself differs from the standard truck only in an equipment of rollers set into the body floor to facilitate handling and in a lengthened wheel-base.



Carrying Lumber by a Truck and Trailer, California

This shows the method of the Pope & Talbot Lumber Company in hauling long timbers, by using a two-wheeled trailer and truck. Timbers of almost any length are easily handled in this manner.

frequent periods of rest in order to perform the work which must be accomplished during each working day. With the very expensive first cost motor truck, immediately arose the question of this valuable equipment lying idle when it might be working.

Whatever reticence the lumber trade has displayed in adopting trucks has been largely due to this difficulty of secondary transportation—handling material at camp, mill or yard—rather than to any shortcomings of the vehicles. Modern scientific management was at once applied to the use of motor trucks and means were devised to keep the trucks in motion a large percentage of the time with only the briefest intervals for loading and unloading. Under the new system it has been found that motor-driven commercial cars show a decided saving, to say nothing of increased efficiency, better service and more satisfied customers.

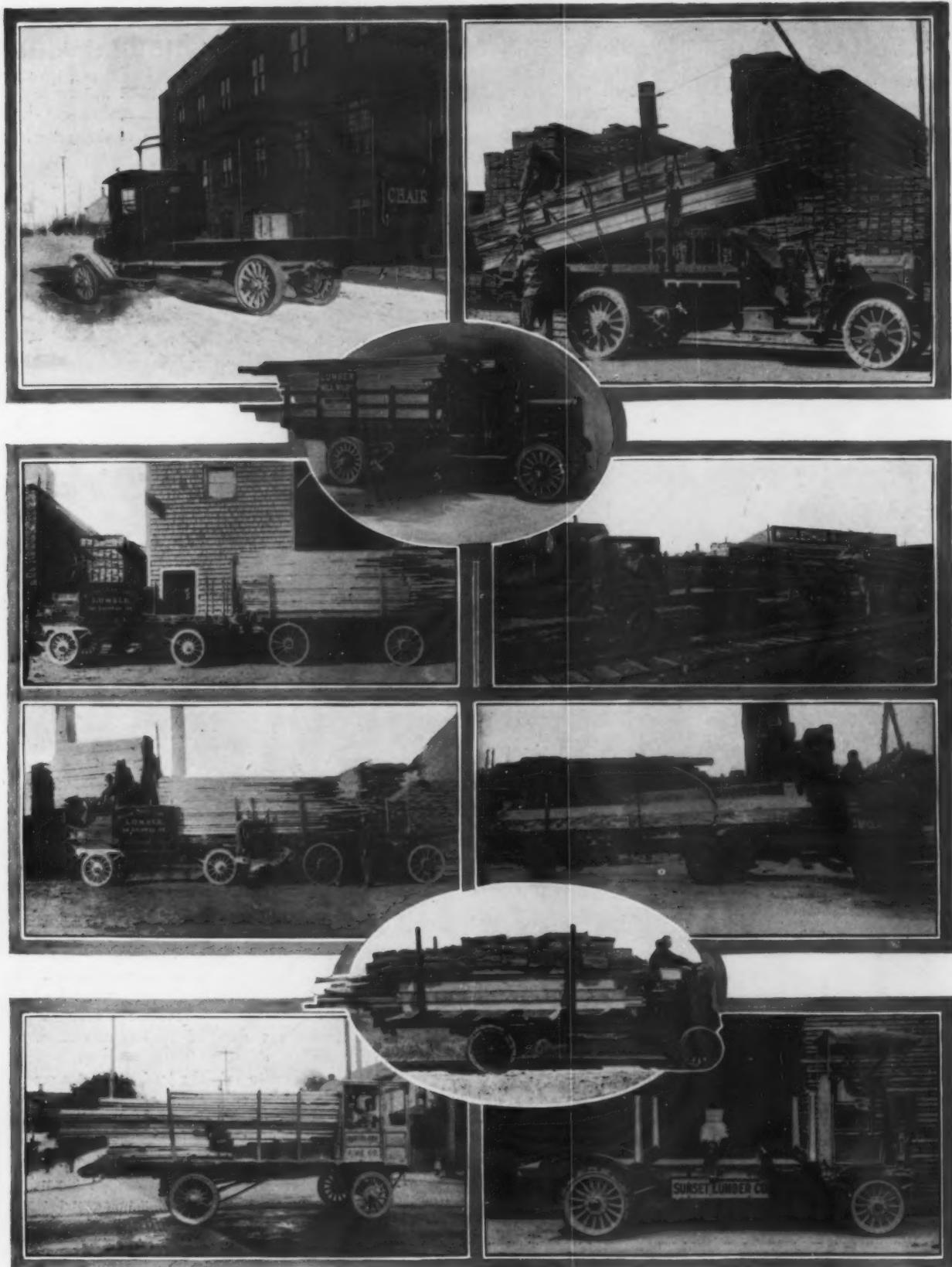
We do not care to be misunderstood as saying that a great saving can be effected by simply installing motor trucks,—certainly not if these are operated on anything like the system now existing with the use of horses.

While the trucks are engaged making one delivery, the yardmen place a full load on the portable platform exactly as it should rest on the truck. Then when the truck returns for another job, it is backed up so that the tail extends under the forepart of the load on the platform. When the wooden horse is removed the load rests upon the rear idling roller, and by backing up a little more, the end of the lumber rests on the first of the "live" rollers.

These are corrugated to grip the load at the bottom and are also operated by cranks on the side of the truck.

One man turns the crank and the load slides forward from the platform to the truck. Then a series of ratchets prevent the "live" rollers from turning. After being tied with rope or chain it is ready for the road, while the yardmen proceed to get the next order, or job, in its place on the portable platform.

When the truck reaches the place of delivery and the driver has ascertained the exact spot where the builder wants the lumber unloaded, the driver reverses the action of the rollers and the lumber is rolled bodily off the end of the truck.



An Interesting Group of Pictures Showing the Use of the Motor Truck in the Lumber Industry

Trucks in all kinds of lumber work showing special bodies, methods of roping, methods of loading from four-wheeled idlers and also from two-wheeled idlers with skidding pole, also a method of handling very long timbers by using two auxiliary wheels. The truck in the lower center is carrying daily a load of five and a half tons of lumber, for tunnel construction, up a mountain road with a rise of five thousand feet in seven miles.

dropping intact, just as if each piece had been piled up by hand.

Loading by Means of an "Idler"

Another method of making trucks profitable in the lumber business is to use an "idler," that is, a wagon with a platform that is interchangeable with the platform of the truck. An order comes in for a load consisting of several sizes of timber. Part of this is in one place in the yard and another part in another place, thus requiring considerable time for assembling. The idler may be pulled from one part of the yard to another by horses and the load properly arranged on it. It is then drawn up beside the empty truck, as shown in an accompanying illustration, and with its load is slid sideways onto the truck, the whole operation requiring less than three minutes. On the return of the truck its empty platform is immediately exchanged for one that has been loaded during its absence, and thus the maximum of work is had from the power machine.

The illustrations show the characteristic styles of bodies, these being common wherever lumber wagons are used throughout New England. The raised frame work at the forward end is surmounted by a roller and at the rear is another, these facilitating loading and unloading, the loads rolling off just the same as with horse-drawn wagons. On this type of wagon very long timbers can be carried which would be very difficult to handle on an ordinary wagon. The long timbers are placed well forward balancing the load and doing away with the extremely long overhangs at the rear.

It is not an uncommon sight to see one of these typical New England wagons with its load extending so far over the hood and around the driver that he is almost concealed from view.

Lumber Truck With Wood Tires

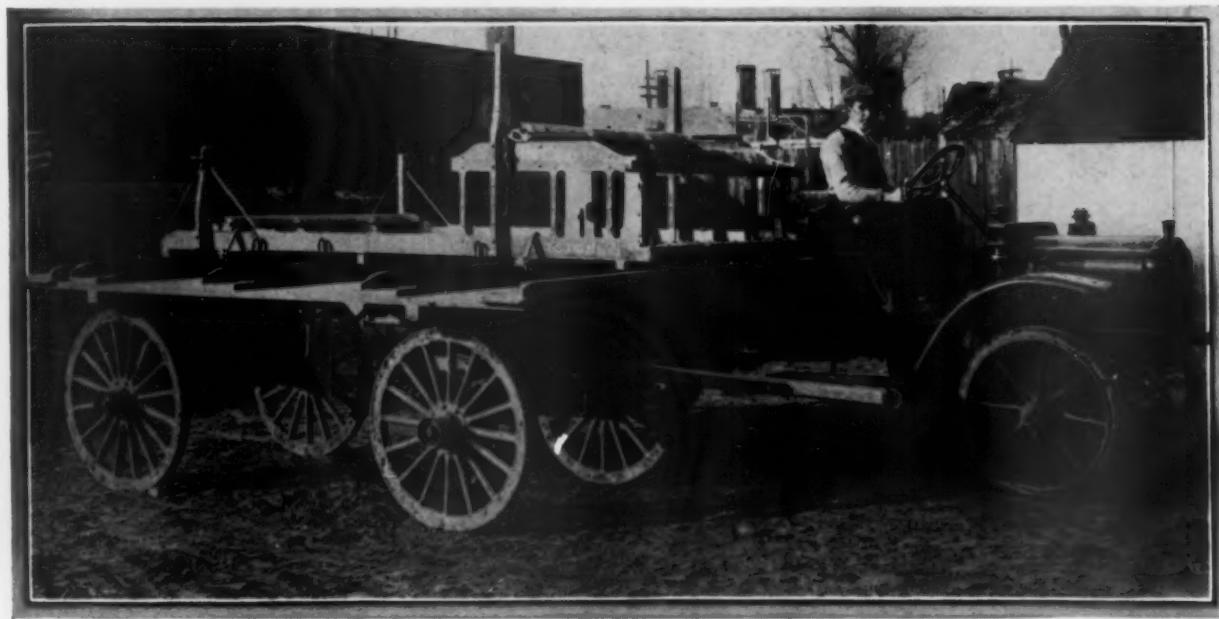
The firm of J. Lunan & Sons, Fall River, Mass., employ a 5 ton 60 h. p. Knox truck, which is fitted with special wood



Rear View of Lumber Truck

This Sampson truck is fitted with a series of rollers. The rear and alternate rollers are free, while the others are corrugated and operated by cranks which carry the load backward until it tilts by gravity to the ground, when the truck is driven from under it.

block tires on the rear wheels. These tires are the invention of J. Lunan & Sons themselves and are especially adapted to the road conditions. This particular machine is used in hauling lumber from the scene of the logging to the mill, a distance of some 13 miles of very rough going through the woods and over swampy muddy land, there being only one short



Commercial Car Loading by Means of "Idler"

The above illustration shows how by means of an old wagon and a movable platform, these two constituting what is known as an idler, the modern commercial car can be instantly loaded by sliding the platform from the wagon to the truck. While the truck is delivering, another load is assembled, and upon the truck's return it is but the work of a few minutes to send it on its way again loaded.



Lumber Truck With Wood Tires

This machine is doing the work of seventeen horses, negotiating daily a route of thirteen miles of the roughest woods and swampy land between the logging fields and the mill, and at the same time shows marked economy over horse methods.

piece of what might be termed decent road in the entire 13 miles.

With regards to the wood block tires on the rear wheels, it is interesting to note that their performance in this case has been very satisfactory, owing doubtless to the nature of the roads, these being soft and yielding, although dotted with rocks and stumps. The tires seem to suffer very little wear and the owners claim that they are probably good for 10,000 miles before requiring replacement.

This truck averages 4500 ft. of lumber to the load, and according to the owners, it is doing the work of 17 horses. Having had abundant opportunity to learn what it costs to operate horse-drawn equipment, the members of the firm say it costs from 50 to 60 cents a day to feed and stable a horse. The five horses required to obtain a four-horse team for this work, before the truck was put in service, caused an expense of \$1.50 a week for veterinary treatment, and \$1.25 a week for shoeing. Such horses as were needed for this work were bought by the company for \$275 each, and depreciation is figured at 25%. The wagons used in this work cost \$350, and, according to the members of the company, so many repairs were necessary that it seemed wise to write off the entire wagon at the end of the year. Harnesses cost \$110 a set, and depreciation in this service is charged at 50%.

The truck chassis and the body placed on it by the company cost about \$4750. Depreciation is figured at 25%. It

has used about 80 gallons of gasoline a week; some of the time it has operated on 70 gallons, and when the truck was first sent into the woods it required as high as 90 gallons. The average has been about 80, however. A gallon of oil a day is required. Tires are figured at three cents a mile for the front wheels and one cent for the rear. The sole expenditure for repairs to May 11 was \$9 for three sets of bushings and about \$5 for other items. Nothing is charged for storage in either case, as the horses are stabled in a barn on the company's property and the truck in a shed adjoining the box making plant.

Based on these figures, the cost of the two equipments for 29 weeks, the time in which the truck has been in operation, and one year, respectively, follows:

Expense of Truck

	29 Weeks	1 Year
Gasoline	\$243.60	\$436.80
Oil	43.50	78.00
Tires, wood, one cent a mile	87.00	156.00
Tires, rubber, three cents a mile	261.00	468.00
Driver and help	1102.00	1976.00
Repairs	14.00	25.10
Depreciation, 25 per cent. on \$4750	662.07	1187.50
Totals	\$2413.17	\$4327.40

Expense of Five Horses

	29 Weeks	1 Year
Feed	\$580.00	\$1040.00
Shoeing	45.31	81.25
Veterinary	43.50	78.00
Driver and help	696.00	1248.00
Depreciation—Horses, 25 per cent. on \$1375.	191.71	343.75
Depreciation—Wagon, 100 per cent. on \$350.	195.20	350.00
Depreciation—Harness, 50 per cent. on \$110.	30.65	55.00
Totals	\$1782.37	\$3196.00

One Truck Does Work of Seventeen Horses

Seventeen horses cost annually	\$10,866.40
Truck costs annually	4,327.40
Balance in favor of truck	\$6,539.00
Charge off truck, less 25 per cent. already figured off	3,562.50
Actual profit, first year	\$2,966.50

The service is unusually strenuous and shows conclusively the very wide range of adaptability of the modern truck.



Logging With Motor Trucks

Each truck handles an average of five thousand feet of logs per day, covers about forty-five miles of all kinds of roads, and shows a saving over handling logs with horses.

Weekly Record of Lumber Trucks

The Proctor Brothers & Company, Nashua, N. H., not only use motor trucks extensively, but keep accurate records of their cost and daily performance. The following is an average week's statement of the performance of one of their Sampson trucks.

Statement For Week Ending July 15, 1911

Date	Miles	Gal. Gasoline	Cost Gasoline	Gal. Oil	Cost Oil	Driver's Wages	Insurance	Depar- tation	Tires	Total Expense
10	40.4	10	\$1.05	3 1/4	\$1.67 1/2	\$2.50	\$0.25	\$2.00	\$4.80	\$11.67 1/2
11	38.2	10	1.05	2 1/4	.74 1/2	2.50	.25	2.00	4.58	11.12 1/2
12	52.4	13 1/2	1.40	2	.66	2.50	.25	2.00	6.24	13.05
13	36	9 1/2	.99	2 1/4	.74 1/2	2.50	.25	2.00	4.32	10.80
14	52.4	13	1.36	2 1/4	.74 1/2	2.50	.25	2.00	6.24	13.09
15	40.4	12	1.26	1 1/4	.57	2.50	.25	2.00	4.80	15.13
										259.8 68
										\$7.11 13 1/4 \$5.14
										\$15.00 \$1.50 \$12.00 \$30.98
										\$74.87

Credit Side of Statement For Week Ending July 15, 1911

Date	Quantity Logs Drawn	Drawing Price Per Thousand	Total Earnings for Week	Net Gain
10	5250 ft.	\$3.00	\$15.75	\$4.09
11	4000 ft.	3.00	14.70	3.58
12	6440 ft.	3.00	19.32	6.26
13	4000 ft.	3.00	14.07	3.16
14	6540 ft.	3.00	19.62	6.52
15	5250 ft.	3.00	15.75	.61
	33070 ft.	\$3.00	\$92.21	\$24.22

The following is another typical case of trucks making good in the lumber business. The Middletown Lumber Company, of Middletown, O., states: "The Dayton truck which we are using has given excellent satisfaction since its purchase about one year ago, and has done more than was claimed for it in several ways.

It has taken the place of at least two teams for us and does the work much easier and quicker than it could be done with teams, and our experience has been that the cost of repairs amounts to little or nothing.

The cost of operation per day is considerably less than for a team of horses or mules for the same period, and we believe that a truck of this kind is a very good investment for a lumber concern in any town or city where the streets and roads hereby are suitable for automobile travel."

The Eclipse Lumber Company, of Clinton, Ia., is using a 1 1/2 ton Wilcox Truck. This truck displaces five horses and three drivers, which, according to their figures, cost them \$3672.50 per year. Their total expense for one year on their truck, including gasoline, repairs, driver, insurance, interest

and depreciation at 20%, was \$1863.13. This shows a saving of \$1809.37, or over 60% of the original cost of the truck.

SEVEN TRUCKS IN LUMBER SERVICE

Seven White trucks, six of which are three-ton capacity and one of five tons are used in the lumber service of Theodore Kundtz, Cleveland, O. As compared with horse equipment the statement is made that the ratio is about one truck to three horse outfits, this being true of all seven cars. Horses have been displaced as each truck was purchased. Twenty-nine horses have already been disposed of. The cars are cared for in the owner's garage where an experienced man has charge of the work. The cars are looked over every day before they are turned over to the drivers.

Cost of Operation

It is estimated that about 75 cents worth of gasoline is consumed in a day. Driver is allowed \$2 a day. Tires are figured at \$2 a day, repairs at \$1 and oil at 25 cents, which makes a total of \$6, and then with due allowance \$2 more is added so that it is assumed \$8 a day will cover the cost of operation and the like. The five-ton car is used for work between Cleveland and Lakewood, which makes a ten mile round trip, car light one way, four trips a day or 20 miles loaded.

Two cars are used continually in delivery between the furniture factory and the White sewing machine plant, and on this route three trips is the usual day's work, which makes a total of 39 miles. Occasionally four trips are made.



Truck Delivers First Load of Lumber to Panama-Pacific Exhibition Grounds

The first load of lumber to be delivered to the Panama-Pacific exhibition grounds, furnished by the San Francisco Lumber Company, was hauled by a Federal one and a half ton truck. The load is shown in the accompanying photographic illustration.



Commercial Cars Used for Lumber and Furniture Purposes

The illustration shows the fleet of White Trucks used by Theodore Kundtz, of Cleveland, Ohio, for lumber and furniture hauling purposes. There are seven of these trucks, of different capacities, in his service and they were all purchased in less than two years, replacing thirty horses. Note the trailer, which has been found useful in this service. The sawmill is at Lakewood and from here the lumber, after being fized for use, is transported to the factory in trailers. Sufficient lumber is piled in the chassis to insure traction.

COMMERCIAL CAR IN LUMBER BUSINESS EARNS DEPRECIATION

Potter, Teare & Company, lumber dealers, Cleveland, O., are using a three-ton White commercial car for delivery. This car has been in service since last July and has therefore passed through a hard winter. It is doing very good work and the owners state that they are satisfied. The truck with a gasoline tank cost \$4000. From last July to April of the present year the car earned \$1800 and cost \$1100, therefore it earned above the cost \$700. The service to date may be expressed as follows:

Initial cost of car and tank	\$4000.00
Operating cost from July to April	1100.00
Earning in the same period	1800.00
Daily Cost	7.05
Daily earnings	11.54
Earning over cost	63 per cent
Tire expense (8 tires)	225.00
Daily cost of tires on this basis	1.44

The above is estimated on 26 days to the month or 156 days of service since purchase.



Potter, Teare & Company's Truck

Three-ton truck which earns its depreciation. In six months cost has been \$1100 and the earning in that period is \$1800, so that the car has earned its depreciation, not counting interest on the investment.

These figures have been worked out from the aggregates for the six months' service given by Manager Potter. In this service it must be considered that the owner states the car has earned its depreciation and it has therefore paid for itself for nearly the first year as the total depreciation would be \$740, taking the price of the car as \$3700. As compared with other services this record is regarded as good, bearing in mind that the interest has not been counted.

Loading Mostly on Rear Springs

It is stated that the bulk of the load must be supported on the rear springs and here, as in other lumber services, it was early learned that the rear end must be staunch. Larger springs and tires have been fitted which accounts for some of the tire cost. It was figured that the truck will do the work of about three teams. A team will deliver about $2\frac{1}{4}$ tons of lumber or a team and man will deliver 2500 ft. of

lumber 16 miles in 18 hours, this being the load one way, whereas the truck will deliver 3000 ft. of lumber in seven hours.

LUMBER COMPANY USES TRUCKS AND YARD LOADER

Commercial cars have done good work in the service of the Mills-Carleton Company, Cleveland, O., lumber dealers. A three-ton, four cylinder, gasoline car has been in service for the past eighteen months and a five-ton vehicle has just been ordered and goes into service shortly.



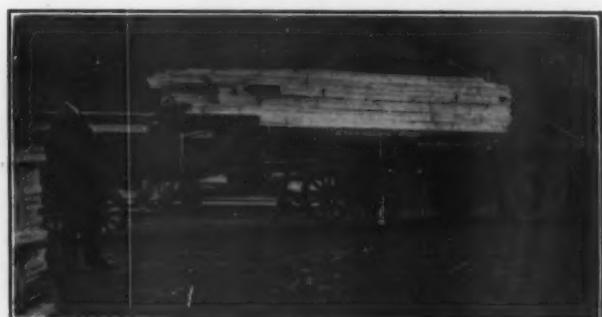
Truck Loaded

Load of maple flooring which has just been shifted from the loading wagon to the truck. The method of holding the loader to truck is also here illustrated.

Ostensibly it has learned many things about trucks for lumber service and expresses the opinion that a three-ton car, because of the peculiar nature of the lumber business and because so much of the load must be carried at the rear that five-ton axles, springs, wheels and tires should be used at the rear. For example the rear tires on the Mills-Carleton truck were 36 x 4 in. dual, and these have been changed to 36 x 5 in. dual, and lately a Goodyear diagonal block tire has been fitted and is said to work nicely. The three-ton car is said to do the work of five horses, and is especially useful for long hauls, though it is employed for general delivery which embraces lumber of all sorts.

Novel Quick Loader

The service is materially increased in efficiency by means of a so called crate loader, this being the company's own device. With this loader the driver can get out of the



The Truck and Loader Together

Load of maple flooring partly on the truck and partly on the loading wagon. The bed rests on steel wheels which operate on T-rail tracks on the truck and loader. The device disposes of loading in about five minutes as against an half hour or more for the usual methods.

yard and on his way in five minutes. Loaded in the old way a half hour at least is necessary. The loader is a flat platform fitted with steel rollers which rest on T steel rails on a special built wheel truck, similar rails being on the car platform. The loading truck is held to the car by means of two large hooks, and the loading crate drawn on to the car by means of ropes. This system is illustrated herewith.

THREE-TON TRUCK USED FOR EXPRESS PURPOSES

John Cronin, proprietor of the Grosse Point Express, Detroit, Mich., uses a three ton White in his express business and asserts that he and his 17-year-old son, Daniel, can with this equipment do the work of four men and seven horses, that is three double teams and a single and do it cheaper and in less



Youth Who Handles Large Truck

D. Cronin, whose father is in the express business, at the wheel of their new White truck. The lad is only seventeen years old and has driven motor trucks for his father for two years.

One of the proudest days of his life was recently when the new White was unloaded at the freight station. Dan was first at the wheel, the first to spin the motor, the first to drive the new black and red car that attracted so much attention.

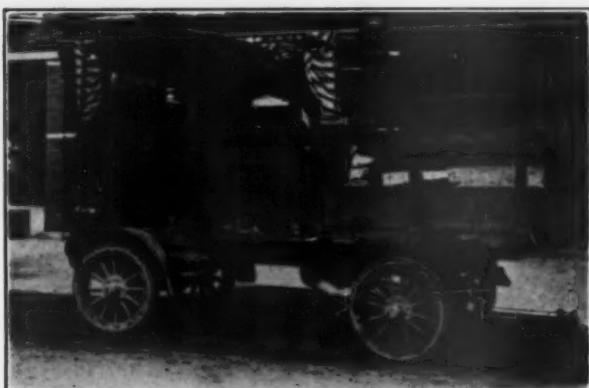


The Grosse Point Express Company's Three-Ton Car

Commercial car as used in the express business; showing the three-ton White owned by J. Cronin, of Detroit, Michigan, and operated by his son. By comparison of body with trunk an idea of its carrying capacity can be gained.

time. The car is loaded with the bulk of the load forward, between the axles. Due to road conditions the load will of itself shift to the rear so this is why most of it is carried well up in the body. The Grosse Point Express covers a general express business, the long run being 14 miles from the Detroit freight depots. The owner lives nine miles from the city and finds an International Harvester, he has two of these, quite handy at the end of the line for distribution of merchandise to the Grosse Point residents. All work on the Cronin cars is done by the owner and his son, who drives the car.

D. Cronin, who together with his father, conduct the Grosse Point Express Company, has driven cars for the past two years and is pretty well up on construction. He spins the crank like an old timer and maneuvers about the crowded freight stations in a manner to indicate careful instruction.



Grabowsky Truck: For Long Hauls and Heavier Work Only

The Merchants Parcel Delivery Company, of Detroit, employs a one-ton Grabowsky, two-cylinder car for transportation of their more bulky merchandise. The firm uses twenty-five horses, and it is the opinion of the officers that by reason of the peculiar features of the service the horses do the work to very good advantage, stops being very frequent. But for the long-distance outside work the car is used, radius of action being on the outskirts of Detroit and vicinity, so that the average distance from the central station is about ten miles. It is estimated that the daily cost of operation, including all expenses, is \$8 per day.



Commercial Car With Trailer Hauling an Immense Flagpole

This photograph shows a White three-ton truck and trailer conveying a flagpole eighty-seven feet long, twenty-eight inches in diameter at the base, and weighing five tons. This liberty pole was carted from Newark to Mendham, N. J., which means one of the most difficult tests to be given a truck, as the route is over the steepest grades in this vicinity, including the historic Hobart Hill. The pole in its entirety is one hundred and forty feet high. It was made by the W. H. Noyes Company of Newark, and was presented Memorial Day to the Borough of Mendham by Frederick Cromwell.



The Smith-Milwaukee All-Steel, Worm-Drive, Three-Ton Truck

Transmission, Full-Floating Rear Axle, and Worm and Wheel Form a Complete Unit

IT is not at all surprising that a concern of the standing and magnitude of the A. O. Smith Company, Milwaukee, Wis., engaged as it is, in the manufacture of pressed steel parts and other motor car accessories, should, on embarking in the commercial car industry, bring forth an "all steel truck." In fact, one would rather expect such. Needless to remark, the Smith-Milwaukee three-ton worm-driven commercial car, when shown for the first time at Chicago, attracted much attention. In brief the Smith-Milwaukee was totally different from anything previously seen or shown in this country. That the Smith-Milwaukee truck should be featured with steel wheels was also quite to be expected, for, why should not steel builders produce an all steel truck? Such a course

are removable. The former is made of cast steel as is also the differential housing, the torsion tube being steel. Tubular strut rods extend from the rear of the transmission housing to the driving axle tubes.

Individual Clutch Transmission

An individual clutch type transmission is utilized, three speeds and reverse. Gears are double herringbone type, 3 in.



Smith-Milwaukee Chassis

Chassis of the Smith-Milwaukee three-ton truck. Note the beaded side rails of the frame, which are seven inches deep. It is claimed that beadings increase rail strength about twenty-five per cent over the usual construction.

would be consistent, and, doubtless serve as an object lesson for others in so far as the possibilities of steel are concerned.

Worm Drive

A prominent feature of the Smith-Milwaukee three-ton car is the worm drive, and that this should be featured by the A. O. Smith Company in its initial car is in itself significant. The worm is made of special steel and the worm wheel of bronze. The makers state that very good results have been attained. The steel worm, the bronze wheel, the bevel gear differential form a complete unit and as such may be removed from the rear axle housing. The driving axles are round but formed hexagon at the ends, driving flanges studded to place. The rear axle housing is pressed steel. The axle tubes which support the load are steel. Bearings are ball.

Unit Construction

The transmission case, the torsion tube and the rear axle housing and differential case form a complete unit and as such

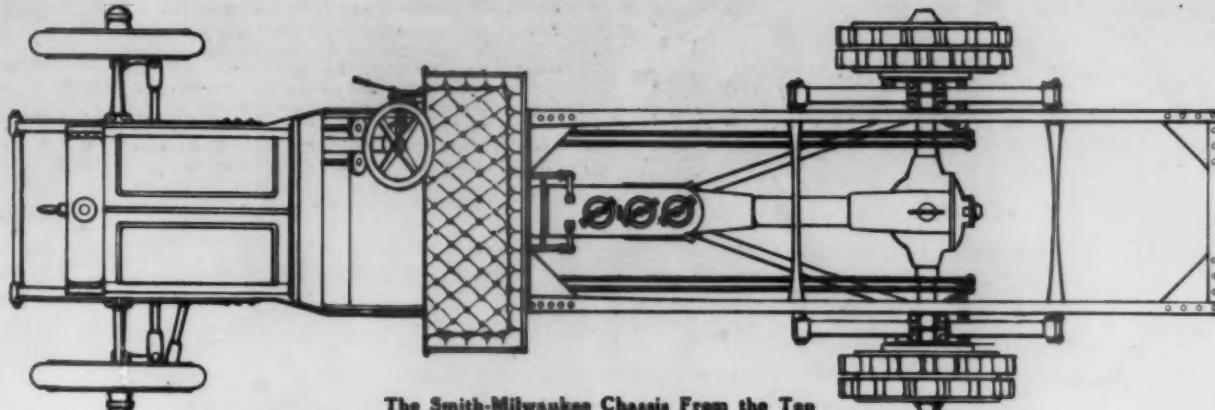
face and are cut by a patent hobbing process from single blanks, these specially heat treated steel. Constantly in mesh, liability of damage is overcome. The gear shafts are mounted on annular ball bearings, also rigidly center supported, each gear being beside a bearing. The gears and shaft, as a unit are supported from the transmission cover plate and may be removed complete.

Tubular Drive Shaft

The driving or propeller shaft is a steel tube with hexagon sockets at each end. At the rear end there is fitted a helical spring which forces against the end of the worm shaft. The propeller shaft tubular housing serves as the torsion rod as mentioned above and this is braced by two diagonal steel tubes.

Steel Wheels

The wheels, very neat in appearance, with heavy webbed spokes are made of cast steel and much emphasis is laid upon this feature of the construction. The fronts differ from the



The Smith-Milwaukee Chassis From the Top

Top plan view of Smith chassis: showing distribution of motor, change gears and other parts of the power and drive system

rears in that there is no web plate formed integral with the spokes. Hubs and brake drums are integral.

Semi-Elliptic Springs

Front and rear springs are semi-elliptic, front $42 \times 2\frac{1}{2} \times 9$ in. retained on the steel plates through $\frac{3}{8}$ in. clips. Front members are $52 \times 3 \times 12$, $\frac{3}{4}$ in. clips used. Spring brackets and steel castings and eyes are bronze bushed.

A peculiar method is resorted to in the anchorage of the rear springs at front and rear ends. Raised drop forged steel bars are used, these retained to the frame rails and formed with pivots for the spring shackles.

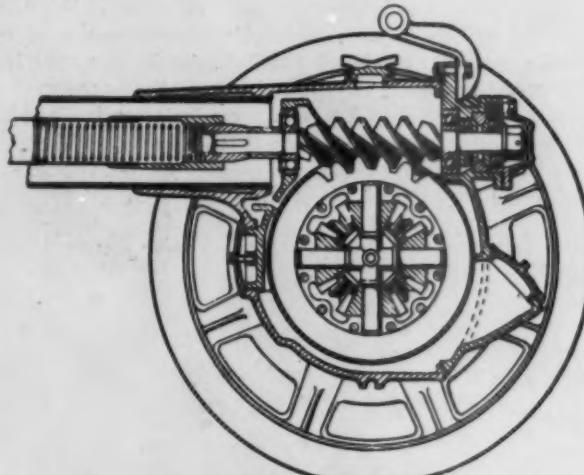
Pressed-Steel Frame

A very neat feature of the Smith Milwaukee is the pressed steel frame, the rails of which are 7 in. channel, beading rolled in top and bottom. This method of treatment is said to afford about 25 per cent. more strength than the plain section. Stock is $\frac{3}{4}$ in. thick. Forward the rails are inswept so that the turning radius is reduced. To stiffen the construction heavy gussets are employed and by reason of the construction of the full floating rear axle case and the transmission housing forming

a unit, the frame is neat in appearance. A heavy cross member supports the transmission housing forward.

Four Cylinder Motor

A Continental four cylinder motor, $4\frac{1}{2} \times 5\frac{1}{2}$, is used and this is supported on a sub-frame and is located under a forward bonnet, sides raised making for complete accessibility. To control the engine speed a governor is fitted. The motor is too well known to require further description here. While the engine is itself secured to the sub-frame at four points, the sub-frame may also be removed with the engine from the main frame by loosening four bolts. In order that the carburetor may be firmly anchored a web or brace is cast with the intake manifold and this is bolted to the side rail of the sub-frame.



Section of the Smith Worm Drive

Details of Smith worm-drive gear: showing differential gears, housings, ball bearings and other contiguous parts

Cone Clutch

Clutch is regulation cone type, 16×4 , six springs under the leather facing making for smooth and gradual engagement. Shaft between clutch and transmission is $1\frac{1}{8}$ in. in diameter.

Twin Brakes

Twin brakes are used, these in the rear wheel drums, fully enclosed. Surface is 18×5 in., aggregate 557 sq. in. Brake tension may be adjusted from the rear by large wing nuts.



Smith Worm Drive

Worm and wheel is here shown. The makers claim very satisfactory results for this equipment. After two hundred miles of hard service one of these was removed and showed no signs of wear.



Pressed-Steel Brake Rods

Another feature is the type of brake rod used, that is pressed steel, U section. These rods are $100\frac{1}{2}$ in. long from end to end, 1-16 stock, $1\frac{1}{8}$ channel. The braking system is not equalized. End connections of rods are drop forged steel.

Control

Gears are shifted by hand side lever operating in H gate, inside forward, low speed; backward, reverse; outside rear second speed and forward third or high speed. The lever is ball topped. Spark and throttle are controlled from the steering post. Ignition is by Bosch magneto but there is also an auxiliary battery system with an independent set of plugs with coil on the dash. Lubrication is by constant level splash system and cooling is by water circulated by centrifugal pump, the cooler vertical tube type, so constructed that damaged tubes may be removed and repaired. Cooler support is through two heavy bronze lugs bolted to the subframe.



Smith-Milwaukee Drive

Here is shown one of the 2 in. driving shafts, which is $1\frac{1}{8}$ in. at the hexagon ends. The worm is steel and the wheel bronze, while the differential is of bevel-gear type. Bearings in the rear axle are annular ball, wheel bearings roller. Drive is through flanges held on with eight $\frac{1}{8}$ in. studs.

Smith-Milwaukee Rear Axle Construction

Showing the construction of the full-floating rear axle. The differential housing is joined to the transmission case by means of a six-inch torque tube, therefore making a unit construction. The worm and wheel assembled with the bevel-gear differential is shown partly withdrawn from the case. Note the propeller shaft with hexagon socket, this a steel tube, at the rear end of which a helical spring is inserted, this seating against the end of the worm shaft.

The brake shoes are steel, faced with Raybestos, and the brake tension may be adjusted from the rear by wing nuts. Note the substantial brace rods extending from the gear box to the axle tubes.

Steering is through screw and nut system from the right side, post 3 in., wheel 18 in., drag link back of the axle.

Tires are 36 x 5 in. single front, 36 x 5 dual at the rear, and when so desired the Smith Milwaukee truck will be equipped with wood wheels. Tread is 68 in. and wheel base 168 in. Standard length of frame is 21 ft., 36 in. wide forward, 42 in. wide rear. Standard platform is 6 x 12 ft. Unloaded weight is distributed over front and rear wheels, loaded 80 per cent. of load is carried at the rear.

Warranty is for one year after date of shipment.



Integral Steel Wheels

Type of cast-steel wheel in which the spokes are heavily webbed and the brake drums and hubs are formed integral.

The Atlas Two Cycle Delivery Wagon



WO cylinder, two cycle, 1500 lb. delivery wagon, selling at \$1750, is offered by the Atlas Motor Car Company, Springfield, Mass., for the present season, this embodying refinements over previous models.

For many years the Atlas Company has featured the two cycle prime mover for pleasure and commercial purposes and the present type employed is the result of much thought and consideration.

engine are more or less analogous in all makes, these functions may be performed a little differently according to the ideas of the designer of an individual type.

General Construction

In general construction, treatment is standard. Some things are done out of the ordinary, as for example, the use of roller bearings for the engine, these of the company's own design and manufacture. On looking over the car one notes



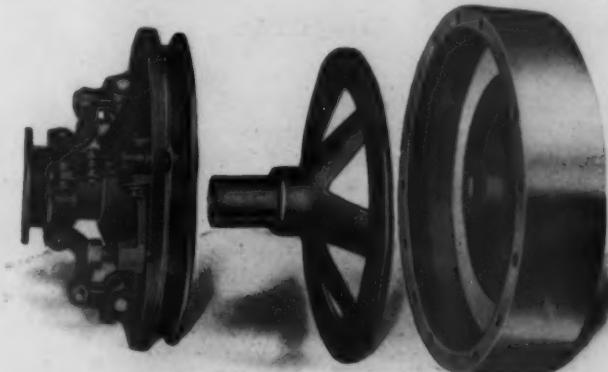
The Atlas Chassis

Delivery wagon chassis fitted with special piano body. Gas tank and toolbox on runningboard; A. K. dash ignition system is shown. Regular equipment includes three oil lamps. Color in Brewster green or option, according to order. The motor hood is very compact, cooler is supported on a cross member of the frame. Fuel capacity is twenty-two gallons with reverse tank of two gallons.

Simplicity

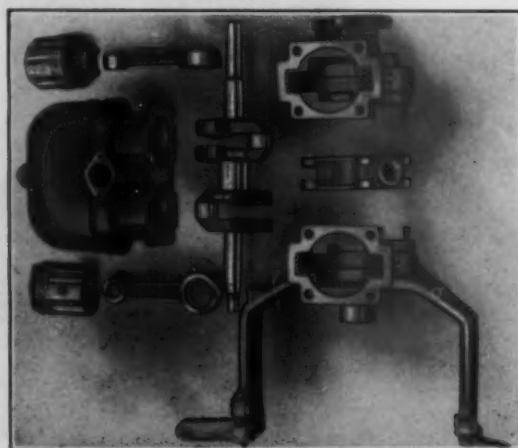
The purchaser of commercial cars today desires simplicity, the fewer functions to be performed, the better, and from this standpoint of simplicity the two cycle engine is pre-eminent. While the fundamental principles of the two cycle

first of all that the motor, clutch and transmission form a single unit, three point supported. A dry plate clutch, which by the way is easily adjusted, is employed, transmission selective



Atlas Flywheel and Clutch Assembly

Floating member is a steel plate, faced front and back with Raybestos; operation is through pedal and three toggles; spring is attached to the pedal; adjustment is made by threads in male and female members; permanency secured through studs registering in drilled holes in the flywheel; pedal fitted with a transmission control stop; clutch must be fully engaged before gears can be shifted.



Components of Atlas Two-Cycle Motor

Showing the two sections of the gas-tight crank case where compression takes place; cylinders cast in pairs with integral water jackets and transfer ports; connecting rods with roller bearings at each end; balanced two-throw crank shaft which has two entry ports at center and the pistons with integral deflector plates. It will be noticed there are transfer ports at each side of the cylinders.

sliding gear, shaft drive and full floating rear axle, one prime reason for the use of which is readiness of dismantling, a consideration in truck service where cars must be constantly employed to produce a revenue.

The Motor

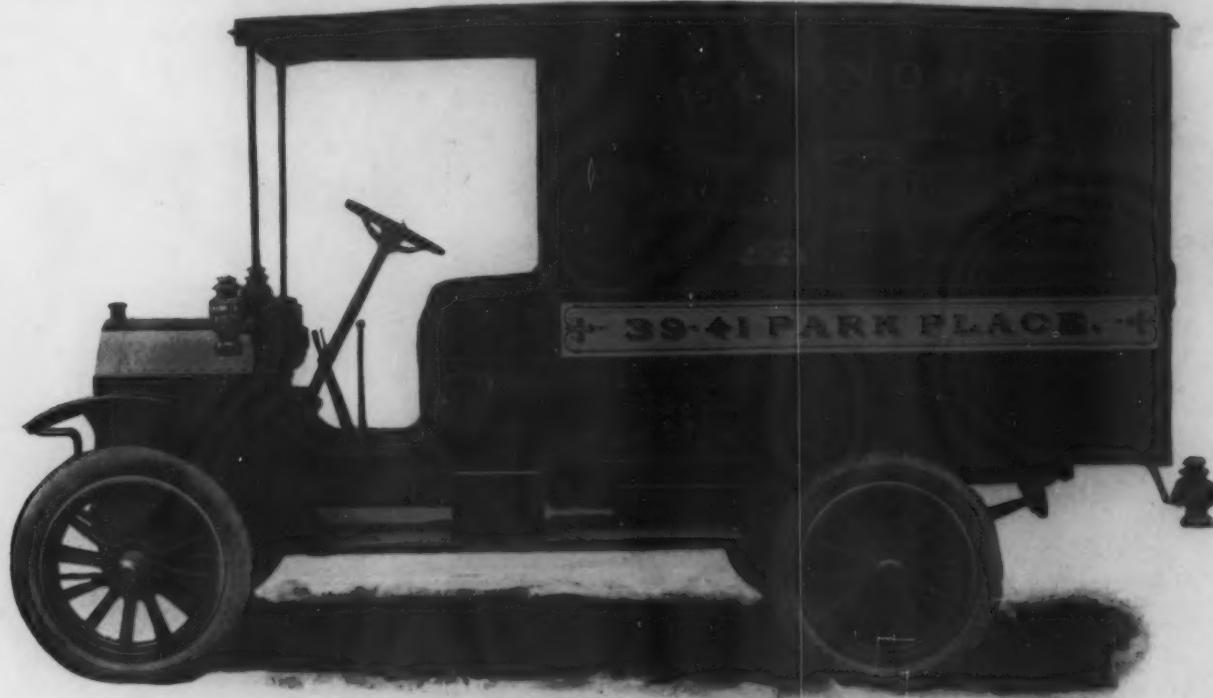
The Atlas two cycle, two cylinder motor is fitted with twin cast cylinders, the roomy water jackets formed integral. Water circulation is induced by a gear driven pump, circulation positive. A by-pass is formed at each side of the cylinders, the charge compressed in the crank case. The carburetor is on the right side and attached to the crank case.

Crank Case

The aluminum crank case is attached forward to a cross member of the frame by a swivel stud. At the rear there are two integral side arms which form a Y, these extensions bolted to the gear box. The case is gas tight as is essential with crank case compression. The case proper is really formed in two sections, that is a gas tight compartment for each cylinder, the two portions assembled as one unit.

Clutch

As mentioned above, a dry plate clutch is fitted. The floating member of the clutch is a thin steel plate, faced both



The Atlas Delivery Wagon

Delivery wagon fitted with 32 x 4½ in. tires and Q. D. rims; wheel base 102 inches, tread 56 inches. Front axle is solid I-beam forging; steering is from the left, with center control of gears and emergency brake; ignition A. K. system; lubrication through mixture which has been successfully employed in previous models. Engine gears are packed in grease.

Roller Bearings

An Atlas feature is the use of roller bearings on the drop forged connecting rods, both ends; and on the crank shaft. This construction has been well tried out and affords, according to the makers, good results. Bearings selected at random at the plant reveal good workmanship. These roller bearings closely resemble annular ball members and hardened steel rollers are substituted for balls. Perfect alignment is possible by means of side flanges, these caring for end thrust. The rolls and bushings are made of special chrome vanadium steel, heat treated and ground.

Ports in Crankshaft

Crankshaft is made of chrome vanadium steel, bearing surfaces hardened and ground. There are two entry ports in the center of the shaft which alternately connect the carburetor with the crank case. Center of crankshaft is offset from center of cylinder. In the cylinder transfer ports are placed thin, corrugated, metal plates which prevent back firing. The pistons are fitted with deflector plates.

sides with Raybestos. Bearing is roller type, company's own design.

Transmission

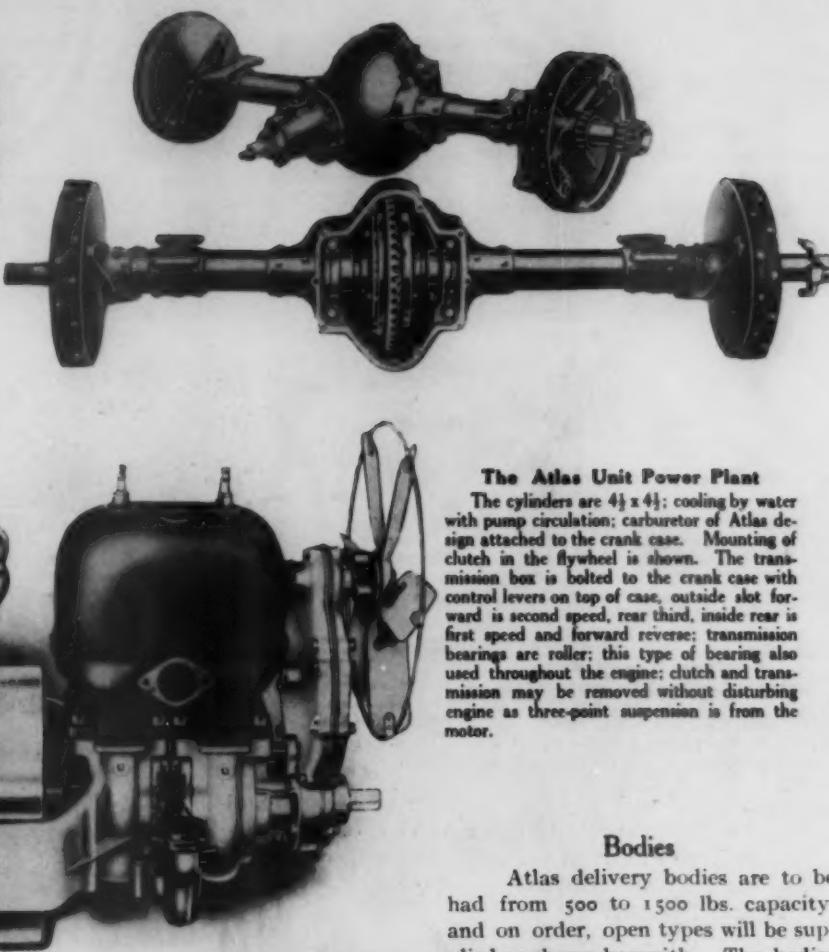
The selective sliding gear transmission is of three speeds forward and reverse, and as noted before, is bolted to the crank case extensions or arms. Box is aluminum, gears are 1 in. face and bearing Atlas roller. Transmission and clutch may be taken down without disturbing the engine. The unit feature has long been the Atlas idea of construction.

Full Floating Rear Axle

Drive from transmission to the full floating rear axle is through a 1½ in. propeller shaft fitted with two universal joints. The driving axles are squared at the inner ends where they seat in the differential, at this point being 1½ in. The outer ends are fitted with four jaw clutches which grasp in the wheel hubs.

Atlas Rear Axle Assembly

This system is full floating. The main housing is steel, tubes tapering from 3 inches at inner ends to 2 inches at outer; differential removable through rear of case; bearings, Timken roller; driving gears adjustable in each direction; pinion and shaft with bearings and housing removable from the front of the case; drive shafts are heat-treated nickel steel 1½ inches main diameter; gears are nickel steel.

**Brakes**

Brakes are in the rear wheels, expanding type, faced with Raybestos, and on the drive shaft back of the transmission box. This is the foot or running brake, 12 in. diameter, 3 in. wide, the rear wheel members being 14 x 3 in. Brake rods are steel tubes, ½ in. diameter, rocker shaft 1 in. diameter, while the draw bars are ¾ in. diameter. The system is equalized.

Springs

Semi-elliptic springs are used forward and back, former being 36 x 2½ in. with seven leaves, the rear sets 46 x 2½ in. of nine leaves. Safety clips are used, so that leaves cannot shuffle. Anchorage follows the usual practice.

Steering

Worm and sleeve steering system is used, control from the left, wheel 16 in., spider four arm aluminum, post 1½ in. The tie rod, ¾ in. diameter, is back of the axle. Drag link, having ball and socket joints is 1 in. diameter. Control levers are above the wheel.

Frame

The pressed steel, hot riveted frame is inswept forward, reinforced by cross members with gusset plates at the center intersections and at the rear cross member. Rails are 4½ in. at greatest channel depth, while flanges are 1¼ in. wide.

The Atlas Unit Power Plant

The cylinders are 4½ x 4½; cooling by water with pump circulation; carburetor of Atlas design attached to the crank case. Mounting of clutch in the flywheel is shown. The transmission box is bolted to the crank case with control levers on top of case, outside slot forward is second speed, rear third, inside rear is first speed and forward reverse; transmission bearings are roller; this type of bearing also used throughout the engine; clutch and transmission may be removed without disturbing engine as three-point suspension is from the motor.

Bodies

Atlas delivery bodies are to be had from 500 to 1500 lbs. capacity, and on order, open types will be supplied as shown herewith. The bodies are built of steel and are durably constructed to stand hard service. Prices are f.o.b., Springfield, Mass.



Pope-Hartford Truck in Acme Tea Company's Service

The Acme Tea Company operates a chain of 240 stores in Philadelphia and suburbs. In addition to its grocery business, the company maintains its own bakery, having a capacity of one hundred thousand loaves daily, necessitating the distribution of the freshly-baked bread every day, during the early morning hours, with regularity and dispatch. For this purpose the Acme Tea Company has in service three Pope-Hartford three-ton trucks, one of which is shown in the picture. After the bread has been delivered, the trucks are used in hauling flour between the warehouse and bakery. They average sixty miles a day.

Lincoln Commercial Cars For 1912

The Lincoln Motor Car Works, of Chicago, Ill., has featured two models of light delivery cars, in addition to its regular line of trucks for 1912. The light delivery service is one that presents a problem which requires special attention from both the automobile manufacturer and the business man. In the first place, the average light delivery wagon driver is a boy or man without any mechanical train-

rating. The customary construction in the ordinary two-cylinder opposed air cooled motor is to have the crank case and cylinders integral, with removable cylinder heads, but in the Lincoln motor this construction is altered, in that the cylinders are not an integral part of the crank case, but



Lincoln Open Delivery, Model 29

Lincoln Model 29, 14 h.p. open delivery car with flare boards; two-cylinder, horizontal-opposed, air-cooled engine with offset cylinders, 4½ in. bore, 4 in. stroke; friction-drive transmission and double chain drive from jack shaft; wheel base 87 in., tread 56 in.; 36 x 2 in. cushion or 34 x 3½ in. pneumatic tires; space behind seat, 5 ft. long, 37 in. wide and 10 in. high; capacity 800 lbs.; price \$685; with cushion tires \$650.

ing, and to put such a person in charge of a complicated piece of mechanism would be dangerous to both. The solution of this problem is in the simple construction, such as we find in the Lincoln models.

A second problem was whether a two or four-cylinder motor would be the better for light delivery. By experimenting on both, it was found that the two-cylinder motor would do efficient work.

The motor used in the Lincoln cars is a two-cylinder, horizontal opposed air cooled engine with offset cylinders 4½ in. bore and 4 in. stroke. It is rated at 14 h.p. S. A. E.

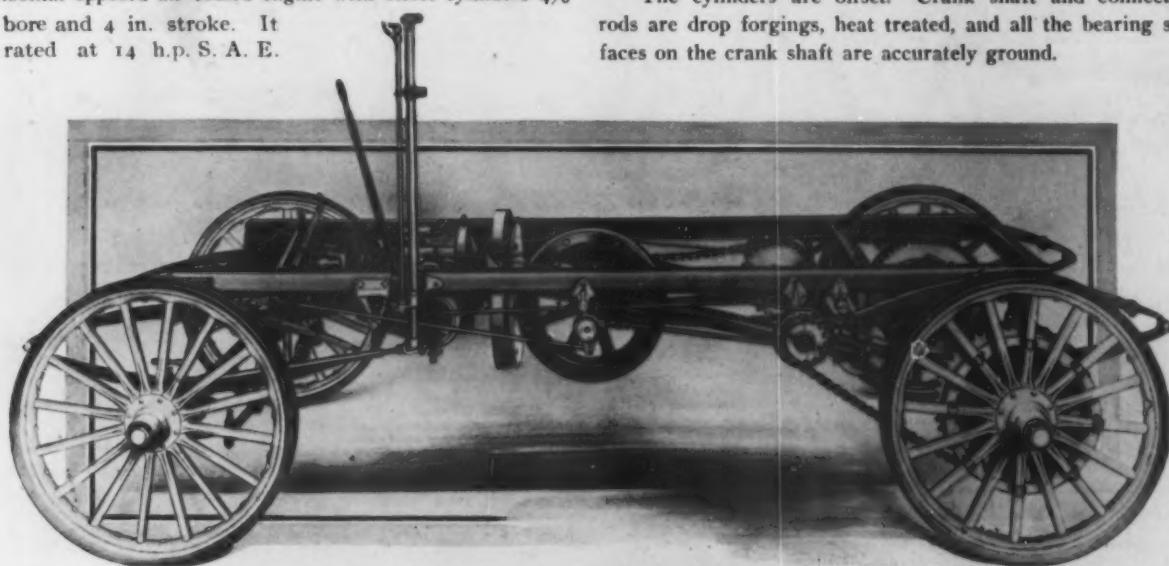


Lincoln Delivery Car, Model 27

Lincoln Model 27, light enclosed delivery car; with two-cylinder, horizontal-opposed, air-cooled engine; offset cylinders, 4½ in. bore and 4 in. stroke. This 14 h.p. car has a friction-drive transmission and double side-chain drive from jack shaft. Wheel base 87 in., tread Standard; 34 x 3½ in. pneumatic tires or 36 x 2 in. cushion; space behind seat 54 in. long, 40 in. wide and 55 in. high; capacity 800 lbs.; price, \$785; with cushion tires, \$750.

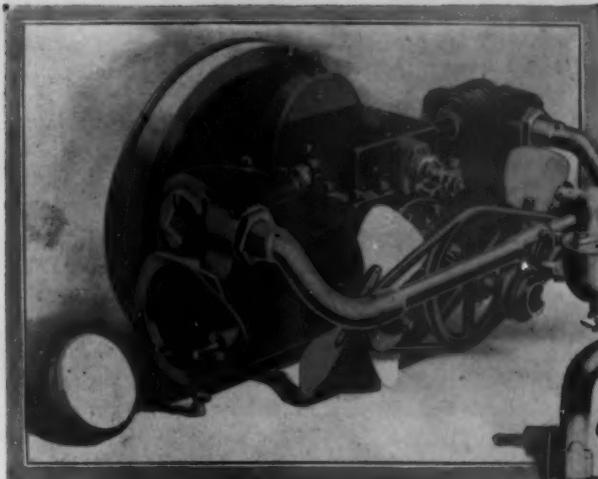
bolted to it, and in addition have the removable cylinder heads. This allows the removing of the cylinder heads to clean out carbon without disturbing the cylinder and gives the added advantage of being able to remove the cylinder from the crank case if necessary.

The cylinders are offset. Crank shaft and connecting rods are drop forgings, heat treated, and all the bearing surfaces on the crank shaft are accurately ground.



Lincoln Chassis, Showing Friction Drive

Side view of Lincoln Chassis; showing pressed-steel frame, channel section reinforced with gusset plates. Friction-drive transmission can be seen directly in rear of motor. It is composed of a composition disc brought in contact with a fiber wheel which has single chain drive to jack shaft and double chain drive from jack shaft to rear wheels.

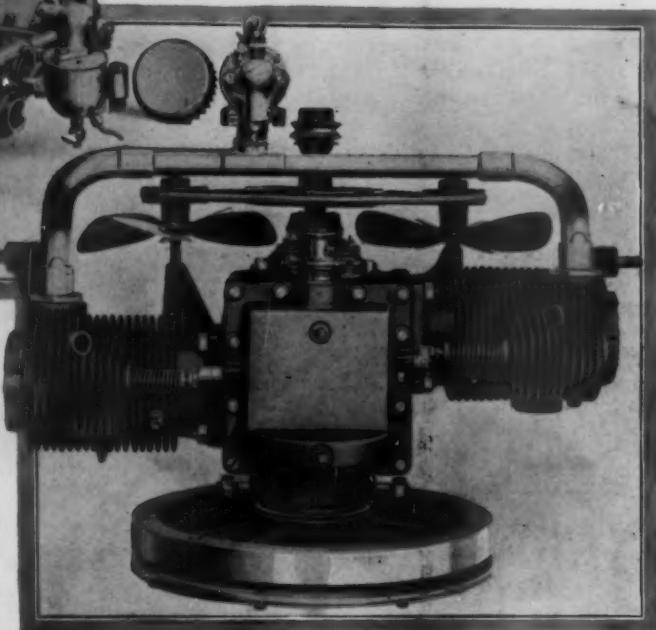


Detail Views of The Lincoln Motor

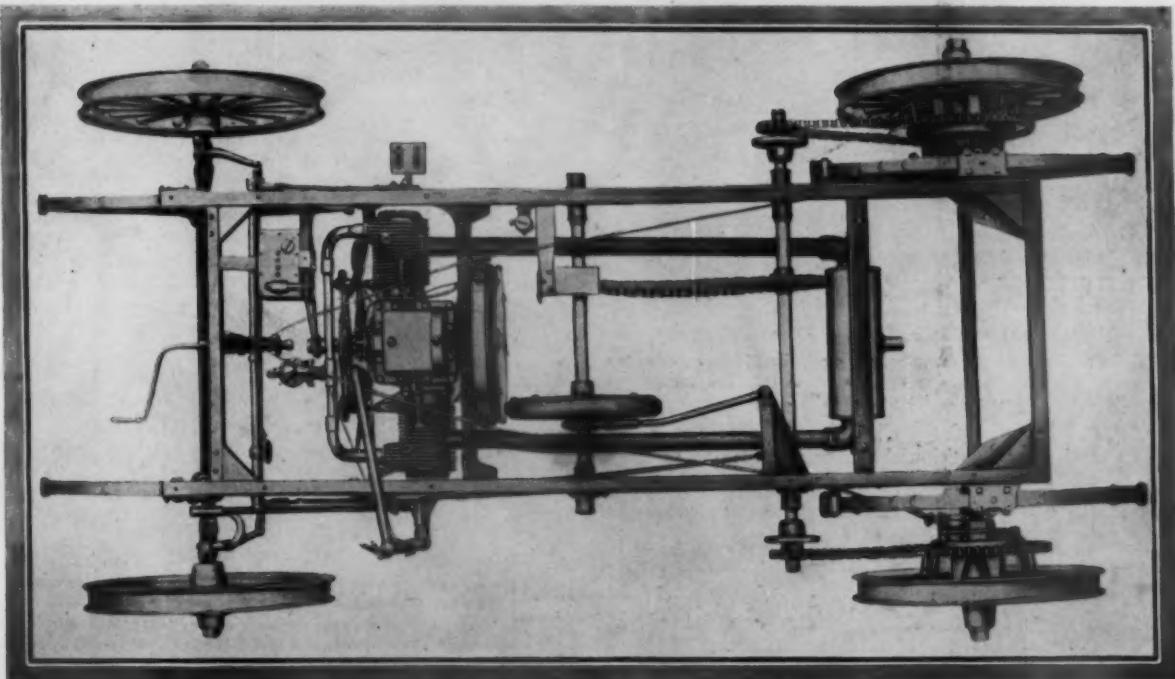
Upper view shows front of the Lincoln Motor, showing accessibility to all the parts. The cylinder heads are removable, allowing the cylinders to be cleaned without taking the motor apart. The heads are screwed in and ground to a bevel seat, eliminating burning out or blowing out of gaskets. Lower view shows the top of the Lincoln Motor, showing offset cylinders, large crank case, which allows plenty of room to work, and the general clean-cut appearance of the motor.

Pistons are annealed and carefully ground to fit, and piston rings are ground on three sides. A single cam shaft, having the cams integral and hardened and ground, is used and located in the top of the crank case, making it very accessible.

The valve plungers are hardened and ground, and are provided with hardened adjusting screws to take up all wear.



revolve at twice the speed of the crank shaft, thereby keeping up a continual circulation of cool air.



Top View of Lincoln Chassis

Showing the two-cylinder, horizontal-opposed engine with offset cylinders, $4\frac{1}{2}$ in. bore, 4 in. stroke. Friction disc and wheel can be seen in rear of motor, with single chain drive to jack shaft. Supply tank under rear of frame; pressed-steel frame and four full-elliptic springs; double chain drive from jack shaft to rear wheels.

Ignition is jump spark, with multiple battery and non-vibrating coil; the spark plugs are located in the inlet valve chambers, and the constant flow of vaporized gasoline passing by the spark plugs into the cylinders keeps them clean.

Schebler carburetor is located on top of intake manifold to each cylinder, at top of motor.

Transmission of the Lincoln cars is the friction drive type, having a composition disc which is brought in contact with a fibre wheel. This disc is controlled by a lever on the side of the driver, and with this friction drive an unlimited amount of speeds may be had on forward or reverse. Here we have two single parts doing the work of numerous smaller parts in an efficient and noiseless manner.

The fibre wheel of the friction drive transmission has a single chain drive to the jack shaft, which has a double chain drive to the rear wheels.

The jack shaft carries a differential and is so constructed that the differential practically locks in a hard pull when one wheel is getting greater traction than the other.

Front axle is heavy, solid drop forging; rear axle is dead, square solid drop forging.

Frame is of pressed steel, channel section, thoroughly riveted and reinforced with gusset plates.

The two cars that the Lincoln Motor Car Company are featuring for 1912 are Model "29," a 14 h. p., open delivery car with flare boards, two cylinder, horizontal opposed air cooled engine with cylinders offset, $4\frac{1}{8}$ in. bore by 4 in. stroke. Price, \$685; with cushion tires, \$650, and Model "27," light, enclosed delivery car with the same engine as Model "29," at \$785; with cushion tires, \$750.



NEW G. M. C. DUMP BODY

There is now being featured by the General Motors Company a new type of dumping body which is shown in the accompanying illustration.

The body is raised by the power of the motor, transmitted through the gear box to the body raising winch drum, operated by a self-locking worm and wheel. The body may be lowered by power, control being from two hand levers at the driver's seat.



New General Motors Company Dump Body

The illustration shows the dump body in a raised position, exposing the gear, which operates the raising winch with drum. The raising and lowering of this body is regulated from the driver's seat.

In the discharge position the body is raised to an angle of 45 degrees and the swinging door or tail gate can be adjusted as desired, permitting equal distribution of the load over a given area. The new equipment is especially well adapted for sand, gravel, asphalt and the like. The self-dumping body is fitted to the 3½ and 5 ton chassis.

Advice will be gladly given the readers of the COMMERCIAL CAR JOURNAL on all subjects connected with the proper installation and use of commercial cars. Do not hesitate to write stating clearly the conditions. Let us help you.



Books Delivered by Motor Car

The illustration shows a motor car which does duty as a traveling bookcase. The car body is fitted on both sides with rows of shelves and room is provided for carrying cases of books for the seventy branches of the main library. This car is in the service of the Washington County Free Library, of Hagerstown, Md., and is claimed to be the first one ever built in the United States for the purpose of delivering literature from door to door. It was built by the International Harvester Company, of Chicago, and is especially adapted for travel along rough mountainous roads.



New Type of Highland Body, Carrying Out the Standard of Length and Width of Frames

The truck manufacturers are gradually coming nearer to a standard on the length and width of frames, due to the efforts of the N. A. A. M. The Highland Body Company has already adopted standard types, of which the cut shows one, this being the flare-board express body design. Special attention should be drawn to the strength of construction, which is emphasized by the strong bracing of the flare boards to the side pieces and frame pieces. The tailboard, with its four hinges and metal edging, also embodies this idea.



C.C.J. GALLERY of SALES MANAGERS




Leading Lights of the Industry

ARTHUR L. GARFORD

In the career of Arthur L. Garford, President of The Garford Company of Elyria, Lorain County, Ohio, is shown that definite persistence and ambition that are the mind's inspiration in the surmounting of obstacles—the vitalizing ideal that transforms dreams into deeds. In connection with industrial and commercial affairs he has made a record of admirable achievement, and he is now recognized as one of the foremost business men of the Western Reserve.

He is also known as a citizen of unequivocal loyalty and integrity, and as one whose public spirit has led him aside from the line of direct personal advancement to do well his part in the promotion of general welfare. He is a dominating factor in connection with political affairs in his native state, and his prominence in the councils of the Republican party is indicated in the fact that his name has been brought conspicuously forward in connection with the party nomination for governor of Ohio.

He was born on a farm in Elyria in 1858. When 19 years of age he became cashier in the extensive china importing house of Rice & Burnett, in the city of Cleveland. He returned to his home in Lorain County three years later and became book-keeper in the Savings Deposit Bank of Elyria. In 1891 he assumed the office of cashier. During his first year as cashier Mr. Garford invented a bicycle saddle, which held such promise that he resigned in 1892 as cashier and formed the Garford Manufacturing Company. In 1893 a mill was built. The Garford saddle became one of the most popular in the country. Other companies were absorbed until the inventor's company controlled the bicycle saddle industry in the United States. A million saddles a year were made. The companies were consolidated and Mr. Garford formed the American Saddle Company which proved to be a great success. The saddle company was in turn absorbed by the American Bicycle Company, of which Mr. Garford became treasurer. He subsequently withdrew from the concern and organized The Automobile & Cycle Parts Company, whose title was later changed to the Federal Manufacturing Company.

In 1902 Mr. Garford went to France and reorganized, with a commission for the owners, the Cleveland Machine Screw Company, under the name of Cleveland Automatic Machine Company. This corporation has an extensive plant in Cleveland, and controls a large business throughout the United States and the European continent and England.

In 1905, Mr. Garford, having previously resigned from the Federal Manufacturing Company, purchased its automobile parts plants in Cleveland and Elyria, forming The Garford Company. In 1907 Mr. Garford built the large automobile factory in Elyria, and the same is operated under the name of The Garford Company. The company owns 23 acres of splendid manufacturing property, with a north boundary of 1000 ft.,

on the main line of the Lake Shore and Michigan Southern Railroad. The Garford plant contains 250,000 sq. ft. of floor space and is of concrete and steel construction, absolutely fire-proof. The plant is equipped with the highest type of machinery and tools.

For years The Garford Company has been known as a maker of high-grade chassis, which were formerly sold to the Studebaker Automobile Company, which marketed the completed cars. The success of these cars, together with the growing importance and magnitude of the commercial vehicle business, determined the management to erect and equip a body plant and market its own output. During the last year Mr. Garford concluded arrangements with Mr. Willys, of the Willys-Overland Company, resulting in the formation of the Willys-Garford Sales Company, which has for its purpose the marketing of the entire output of Garford cars and trucks through the Willys-Overland agents.

Mr. Garford has organized and identified himself with many industrial corporations in Elyria, all of which have been distinctively successful. His productive energy seems to have "grown by what it fed on," and there has been no apparent limit to his powers as an organizer and "captain of industry." In 1903 he organized the Columbia Steel Works of Elyria, where he built its fine plant. He is a large stockholder in the Perry-Fay Company of Elyria, of which

he was an organizer. He is also President of the previously mentioned Cleveland Automatic Machine Company, which is incorporated with a capital of \$1,000,000, and owns the controlling interest and stock. In 1898 he purchased a majority interest in the Republican Printing Company of Elyria, of which he is president. This Company publishes the Evening Telegram, one of the leading Republican dailies of the Western Reserve.

In 1895 he effected the organization of the Fay Manufacturing Company, of which he became president, as did he also of its successor, the Worthington Manufacturing Company.

In 1907 he assisted in the organization of the American Lace Manufacturing Company of Elyria, and he has since been its president.

As a business man of varied and important interests, Mr. Garford has practically had no trouble in connection with the labor problem. He is liberal in his policy of administration and accords to employes not only their just deserts, but shows a lively appreciation and sympathy, so that he retains their confidence and good-will. Mr. Garford is of the best type of successful business man. He finds time not only to build up his material fortunes, but also to build up his city and to do his duty as a citizen. Mr. Garford is a long-distance thinker. He has a creative mind. When he looks into a proposition, he analyzes it thoroughly and draws a logical deduction of what there is in the future for it.



ARTHUR L. GARFORD

C. W. HELLEN

C. W. Hellen was born in Rockford, Ill., 1882. His first business connection was at Webster City, Iowa, in 1895, working for the Bell Telephone Company. At the age of 15 he became manager of the local company at that point. During that year he learned telegraphy, and later became manager of the Western Union branch there. He then accepted a position with the Litchfield Manufacturing Company, which at that time was simply manufacturing agricultural implements, and remained with that concern eleven years, during which time the plant was moved to Waterloo, Iowa. He started in with this company at the bottom in the office, and at the time of leaving in the Fall of 1909, was Assistant General Manager.

He went down East and was for nine months connected with a gas syndicate, owing a line of gas plants; however, all the time he was looking around for something in the manufacturing business where he could get into business for himself. He finally got in touch with the Dart Manufacturing Company, which was originally organized in Chicago, later moved to Anderson, Ind., and in the Fall of 1910 to Waterloo.

Early in the year that he became associated with the Dart Company, he took charge of the building of its new factory buildings at Waterloo, and when the company actually moved over, was elected President and General Manager.

Under Mr. Hellen's management, the business has gradually grown until now they have a large plant at Waterloo. On January 1st, had contracts for over 2600 cars for delivery during 1912. Mr. Hellen has personally brought about arrangements whereby a branch factory is to be established in the East, in the vicinity of New York City for the handling of the Eastern business. The company is now being re-incorporated on a basis of \$600,000, and is figuring on building between 2000 and 3000 cars this next year.



C. W. HELLEN

H. E. WILCOX

Up to November 1, 1906, H. E. Wilcox was manager of the J. F. Wilcox Company, sash and door manufacturer, at which time he incorporated the H. E. Wilcox Motor Car Company, with a capital of \$50,000 to build pleasure cars.

At that time the company had a small machine shop 50 x 50 feet, which was devoted to the manufacture of cars. Between that time and January 1st, 1908, it built the four-cylinder, air cooled, double chain driven pleasure cars, and in this small space fifty of these cars were built and were sold in the states of Minnesota and North and South Dakota.

In the latter part of 1907, it was decided to build two experimental trucks, and the first two Wilcox trucks were put on the market and sold in the early part of 1908. These two trucks gave satisfaction from the very start, and the company immediately added on another room, 50 x 50 feet for a blacksmith

shop, which was barely completed when it became necessary to build an assembly room 50 x 100 feet.

Local business houses recognized the merits of the Wilcox trucks, and orders were placed with the company far in excess of its expectations, and in 1909 an additional assembly room of 50 x 100 feet was built. In 1910, being still crowded for room, a three-story building 60 x 85 feet, in which we placed

our drafting room, stock room, body shop and paint room, was built. The company was then reorganized and capitalized for \$1,000,000 and immediately proceeded to add on a four-story building a block long and 60 feet deep.

It was not until 1910 that any orders outside of the Twin Cities were accepted, as the company was anxious to follow up the workings of the Wilcox trucks and eliminate its weaknesses as far as possible, before shipping them too far away from the factory. The plant now has a capacity of over one truck per day, and trucks are being shipped to all parts of the United States.

*By the dusty road the smithy stood
Where horses once were shod
And drivers adjusted their loads of wood.*

*But no such horses now do plod,
Though drivers still adjust their loads,
For dobbin's place is under the hood.*





NEW G. M. C. SERVICE BUILDING

A mammoth service building of brick, concrete and steel will shortly be erected for the General Motors Truck Company at Fort and Twelfth Streets and Lafayette Boulevard Detroit. The building will be one story in height and have a frontage of 700 ft. on each of three streets so that it will occupy one block. Cost will be about \$100,000.

The Indiana Automobile Dealers' Association has been formed with the following officers. President, M. J. Johnson; Vincennes, Ind; Secretary, Dale Ogden, Columbus; Treasurer, Roy Privett, Greensburg, Ind.

THE FORD AUTO & TRUCK COMPANY, Clarendon, Va., has been incorporated with \$25,000 capital.

EVERITT AUTO COMPANY, Baltimore Md., will handle the Board truck in addition to its line of passenger cars.

INTERNATIONAL HARVESTER COMPANY, Chicago, Ill., has opened a branch at 1328-30 Grand Ave., Kansas City, Mo.

COMMERCIAL MOTOR VEHICLE COMPANY, of Chicago, will open new service building at 2637-2641 Cottage Grove Avenue.

DENIS WHITE, Newark, O., has been succeeded by the Ford Sales Company, who have located at No. 3-7 S. Fifth Street.

ARTHUR GIBBONS has joined the commercial car sales department of the Velie Motor Vehicle Company's Chicago, Ill., branch.

PAN-AMERICAN MOTORS COMPANY, San Francisco, Cal., have secured the Pacific Coast agency for the Durable-Dayton truck.

MARSHALL BROTHERS, St. Louis, Mo., have secured the agency for St. Louis and vicinity for the Hatfield truck, built at Elmira, N. Y.

WHITE MOTORS COMPANY, Kansas City, Mo., have expanded and taken on the White truck line, with new quarters at 15th Street and the Paseo.

GREEN'S GARAGE, 197 Broad St., Lynn, Mass., has been taken over by Stephen P. Pierney, who is agent for Metz and Buick pleasure and commercial cars.

CALIFORNIA MOTOR COMPANY
LOS ANGELES, CAL.
PACKARD



NORTHWESTERN OVERLAND COMPANY
MINNEAPOLIS, MINN.
F. W. LEE, MGR.
OVERLAND GARFORD BOWMAN



PACKARD MOTOR CAR COMPANY
CHICAGO, ILL.
PACKARD



THE COMMERCIAL CAR DEALER AND HIS ESTABLISHMENT

No—those pictures at the bottom of the following pages are not pieces of a moving picture film, but they illustrate places of business of commercial car dealers located in all parts of the country. They will give you—Mr. Reader—an idea of the progress that is being made in the commercial car field. Many of the establishments illustrated have been built expressly for the distribution of the truck in addition to offering the user "Service."

JOHN F. AIRESMAN, Somerset, Pa., agent for E-M-F and Flanders pleasure and delivery cars, has sold a half interest in his business to O. W. Dietz.

ALVAH FULLER, agent for Packard pleasure and commercial cars, Boston, Mass., will hereafter do business under the name of the Packard Motor Car Company, of Boston.

INTERNATIONAL MOTOR COMPANY, N. Y. City, have established a Washington branch with offices and salesroom at 811 17th Street, N. W., and a service department at 15th Street and Ohio Avenue.

TAYLOR MOTOR CAR COMPANY, 7125-31 Kelly Street, Pittsburgh, Pa., has been organized by John Taylor, for the selling and distribution of Lippard-Stewart commercial cars in Western Pennsylvania.

LONG RUBBER COMPANY, 1813 Grand Ave., Kansas City, Mo., has been taken over by the Swinehart Tire & Rubber Company, Akron, O., who will operate the store as a branch with C. O. Dall as manager.

A. M. PEARSON, formerly in charge of the commercial car department of the Packard Company in Philadelphia, has taken charge of the sales of Locomobile 5 ton trucks in Philadelphia, Baltimore and Washington.

YOUSE, E. S., COMPANY, Reading, Pa., has purchased the Crescent Body Works at 144 Rose Street, that city, and will operate it as a repair and service station, also probably for the building of commercial car bodies.



Convention of the Ford Agents From the Cleveland Territory on a Visit to the Ford Factory, April 17, 1912

It has been the policy of the Ford Company to bring to their factory some time during the year the agents of each territory, for heart to heart talks and a general discussion of Ford policies, contracts and plans. As the Ford Company has in the neighborhood of six thousand agents, conventions of each district are held separately, so that members of the Ford factory staff can come in closer touch with each individual agent. These conventions have proved of great value, as dealers are able to inspect the rapidly growing Ford plant and watch the production of from four to five hundred cars daily, which in itself is an inspiration. The Ford output for the month of May, 1912, was 9043 cars.

MERIDIAN AUTO COMPANY, 724-730 N. Meridian Street, Indianapolis, Ind., has been taken over by the Waverley Company, manufacturers of the Waverley electric cars, and will be operated as a Waverley garage and service station.

WHITE MOTOR CAR COMPANY, Cleveland, O., will open a factory branch in the building formerly occupied by the old White agency, Sixth and Madison Streets, Portland, Ore. Chas. R. Williams, formerly manager of the Winton branch in Seattle, has been appointed manager.

BAKER ELECTRIC COMPANY, of Mich., has been organized to act as a factory branch for the Baker Motor Vehicle Company, Cleveland, O., and has opened salesroom at 815 Woodward Avenue, Detroit. F. C. Walker is President and W. H. C. Burnett is Secretary and Treasurer.

UNIVERSAL MOTOR TRUCK COMPANY, New York City, has been taken over by the parent Detroit Company, and will henceforth be operated as a factory branch. F. K. Parke, of the parent company, has become President of the New York corporation of which H. H. Walton, former President, is Vice-President and General Manager. Samuel Mann is Treasurer, and Geo. Wheeler, Secretary.

OVERLAND AUTOMOBILE COMPANY, of Dallas, Tex., are having built a three story building, corner Commerce and Preston Streets to be known as the Overland Building. The officers of the company are: W. W. Taxis, President and Treasurer; D. T. Finley, Vice President and Manager; F. M. Bannell, Secretary and Cashier and E. O. Thrackston, Manager parts department.

EUREKA MOTOR CAR COMPANY, 218-220 Adams Avenue, Scranton, Pa., are building an addition 85 x 40 ft. to their garage, this addition having been made necessary by the expansion of their business. They handle Flanders, Franklin and Speedwell commercial cars in addition to a line of pleasure cars.

WM. A. FEARS, formerly connected with the Chase Motor Sales Company, of St. Louis, Mo., has purchased the automobile and engine business of H. Kastrup, Rosalie Street and Fair Avenue, St. Louis, which he will hereafter operate as the Fears Auto & Engine Company, manufacturing motors and commercial cars.

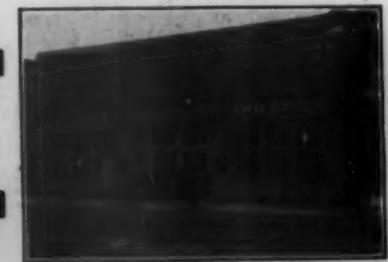
GENERAL VEHICLE COMPANY, Long Island City, N. Y., have moved their Chicago office from 417 Rookery Building to the sixth floor of the Otis Building, La Salle and Madison Streets. The new office will be in charge of W. W. Witherby, who succeeds P. C. Chrysler.

CONSOLIDATED AUTOMOBILE COMPANY, a Vermont corporation, has been formed by 20 of the leading motor car dealers in the states of Vermont and New Hampshire, the idea being to buy goods in bulk and distribute them among the dealers who are members of the company. Howard Blossom, of the Union Garage & Machine Company, St. Johnsbury, Vt., is the leading spirit. J. R. Bradford, formerly of the Commercial Department of the Buick Motor Company's Boston branch, resigned his position with that company to assist Mr. Blossom in the establishment of this new company.

W. C. MORRIS
SAN FRANCISCO, CAL.
AUTOCAR

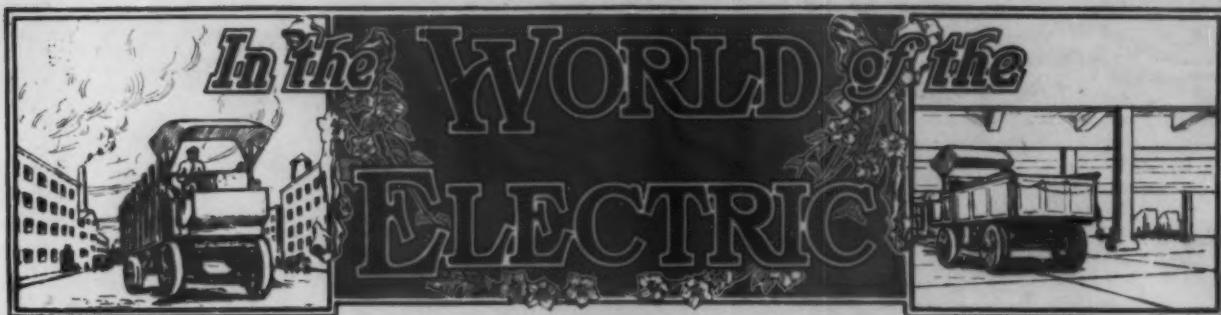


AVERY COMPANY, ST. LOUIS, MO.
H. H. JOHN, MGR.
AVERY



ALVAN T. FULLER
BOSTON, MASS.
PACKARD





The Public Electric Garage

Electric commercial cars in various types and sizes are coming to be more seriously considered for merchandise transportation than ever before. Sales are increasing. While no one car may be said to be universal in that it meets all service conditions, it will be granted that the electric by virtue of peculiar characteristics fills in the gap, very handily. For this reason the electric is coming more and more into favor.

A feature of electric commercial car service is that batteries must be watched closely, but there are many cases on record to show that very little attention is accorded the batteries. The electric is a simple proposition, it is only a case of push the lever forward and bring it back, put on the foot brake and steer. Users of cars, that is many of them, are only too willing to turn the battery service over to an outside party and that is where the well conducted electric garage fits in, the public institution that possesses the necessary equipment and is intelligently managed.

There are many electric garages, public houses, at this time and there will be more in the near future. They will be essential. A good illustration of a well conducted public electric garage is that of the Murphy Power Company, Detroit, Mich. While this concern does not cater exclusively to the electric trade, it is well equipped.

Forty Charging Stations

There are forty charging stations in the Murphy garage. There are ten floors in the building, the aggregate floor space being about 100,000 sq. ft. Ten stations are located on the first floor, thirty on the third floor.

Garage Rates

The Murphy garage rates for electric commercial cars up to 1000 lbs. capacity are \$45 per month, up to one ton \$50

a month, up to two tons \$55 per month, and up to five tons \$60 a month. These prices include storing, washing, polishing, recharging battery and the like, repairs being additional.

In the event of daily battery charge exceeding the ampere hour battery rating of the car, current so used is charged at 4 cents per k. w. h.

Consumption Record

Complete records of electrics are kept at the Murphy garage, the forms used reproduced herewith. It will be noted that there is space on the consumption record card for the 31

MONTH	GARAGE DEPT.											
	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
30												
31												

Consumption Record

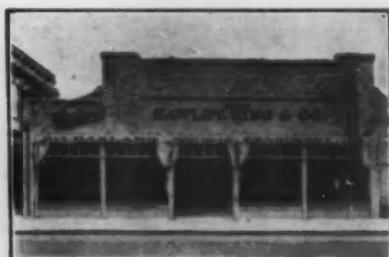
Complete records of consumption are kept for each and every day of the month, as well as various other classifications, which tell the whole story at a glance.

days in a month. There are various other classifications so that the whole story is known at a glance. There is the total k. w. h., total miles, Watts per mile, k. w. h. for the day, Watts per mile for the day, and so on. With each of these spaces filled in there is a complete record of consumption.

HAWLEY, KING & COMPANY
LOS ANGELES, CAL.
GRABOWSKY

AUTOCAR COMPANY
PHILADELPHIA, PA.
AUTOCAR

BELLINGER'S GARAGE, NEWBURG, N. Y.
C. H. BELLINGER, PROP.
GARFORD FLANDERS



OWNER	DAILY OPERATION CARD												FACTORY NO.
	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	
1													
2													
3													
30													
31													

Daily Operation Card

With this card the customer can see at a glance just what his car is doing, and someone else is keeping the record which he might think he could not find time to keep himself.

Daily Operation

A daily operation card or form is used and it will be seen at a glance that it forms a concise record of service. The customer of the firm has all these records; he knows what his car is doing and some one who is making a business of it is keeping the record which he might think he could not find time to keep himself. If another can keep that record more effectively have him keep it by all means.

Daily Mileage

Knowledge of distance traveled is important; it is the one indication of the general condition of affairs. It is equally

OWNER	DAILY MILEAGE CARD												FACTORY NO.
	JUNE	JULY	NOV.	DEC.	MARCH	APRIL	MAY	JUNE	JULY	NOV.	DEC.		
1													
2													
3													
30													
31													

Daily Mileage Card

Showing the mileage of car. This is important, as it shows the general condition of affairs; mileage of tires; how new plates are working, etc. Mileage is the basis for estimation of cost of operation.

as important as the pulse or the appearance of the tongue of a doctor's patient. The mileage record is the telltale. By it one may know how that last set of tires is holding out, how those new plates are working. Mileage is the logical basis for estimation of cost of operation.

The Murphy way is to read the car record and transfer it to a record or mileage card which is arranged for a six months' period. The user gets one of these; he knows how things are going from that record.

Battery Inspection

Battery inspection is essential, regardless of who does it, but let it be done. The Murphy garage uses a complete record

STORAGE BATTERY INSPECTION

Car No. _____ Make _____ Owner _____

Date _____ No. of Cells _____ Type _____

Condition of Battery Box _____

Condition of Trays _____

Condition of Tops of Cells _____

Condition of Connectors _____ Any Hot Ones _____

Condition of Tray Jumpers _____ Any Chafed Through _____

Condition of Gas Vents _____ Any Stuck _____

Condition of Filling Apertures _____

Level of Solution _____

Remarks _____

Inspected by _____ Date _____

Cell No.	Volts	Temp	Gravity	Cell No.	Volts	Temp	Gravity
1				2			
3				4			
5				6			

7		
8		
9		

Storage Battery Inspection

This card gives a complete record of all information desired, such as date of inspection, number of cells, condition of battery box, trays, connections, etc., while on the reverse side space is provided for notation of every cell battery, for volts, temperature and gravity, telling the customer the whole story regarding his car.

FRANK MARTE, PLYMOUTH, PA.
WHITE AND REO



VELIE BOSTON SERVICE STATION
BOSTON, MASS.
MICHIGAN VELIE



ALAMO AUTOMOBILE CO., SAN ANTONIO, TEX.
G. A. C. HALVY, PROP.
FEDERAL, SAUER, MACK AND LITTLE GIANT



ORIGINAL

CREDIT SLIP

OUT OF SERVICE

MURPHY POWER CO.
GARAGE DEPT.

No. 28

Credit _____
OWNER _____

Car No. _____ Make _____

Out of Service From _____ To _____

Remarks _____

Signed _____
Credit Slip

Fig. 6. Should the car for any reason be idle, or laid up or out of service, this credit slip is issued covering the period of idleness. In other words, the owner is not charged full rates while the car is out of service.

card which is spaced off to contain all information regarding the battery, the date of inspection, number of cells, condition of battery box, trays, connections, vents, cells and so on.

On the reverse side of this card there is space for notation of every cell in the battery, for the volts, temperature and gravity. These records are available for the customer so that he knows the whole story regarding his car.

RESULTS OF PRACTICAL USE OF ELECTRIC TRUCK, GIVING ADVANTAGES AND COMPARATIVE COSTS OF ELECTRIC TRUCK AND HORSES

The following comparison of the cost of operation of an electric and horse vehicle is taken from an article by John A. Cleveland, General Manager of the Saginaw Power Company, Saginaw, Mich., in June Central Station. Mr. Cleveland says: "The Saginaw Power Companies now have two electric trucks in daily use, one a 1000 lb. truck, used by the Gas Company as a meter and service truck, and the other a 2000 lb. truck, used by the Power Company as a service and line repair truck.

The following table shows the actual cost of the operation of the electric truck from June 12 to September 30, 1911, inclusive, as compared with the cost of doing the same work by means of a horse and wagon:

Power Company for the period from June 12th to September 30th, 1911.

	Automobile Truck	Horse and Wagon
Total number of miles traveled.....	2009	2009
Total number of hours traveling	199.4	502.5
Average number of miles traveled per hour.....	10.08	4.00
Total number hours in traveling and working.....	846.0	1149.1
Number of hours actually working	636.6	636.6
Total number of days in traveling and working.....	94.0	127.7
Average number of men employed per hour.....	3.88	3.88
Equivalent number hours per man traveling	773.7	1949.7
Labor—30c per man per hour	\$232.11	\$584.91

Maintenance Cost

Automobile—

Charging battery, 768 kwh., at 5c	\$38.40
Estimated amount charged for battery renewals and repairs	63.00
Estimated amount charged for Mechanical repairs	18.00
Estimated amount charged for tire renewals and repairs	30.00

Horse and Wagon—

Estimated amount at 8½c per hour of service	\$97.69
Total maintenance cost	\$149.40
Total cost of doing work	381.51
Operating cost per month on above basis.....	105.98
Operating cost per year on above basis	1,271.76
	2,375.32

Fixed Charges

Automobile—

Interest—5 per cent. of \$1,800	\$90.00
Depreciation—10 per cent. of \$1,800	180.00

From the foregoing figures it is evident that the total yearly cost of the automobile truck is about 50 per cent. of the horse and wagon in doing the same work, which, in the case of the truck operated in Saginaw, means a yearly saving of nearly \$1,000.

THE M. & P. ELECTRIC VEHICLE COMPANY, of Detroit, Mich., announces that the price of its 1000-lb. electric car is now \$1450 for chassis only, \$1500 equipped with open express body, and \$1600 with panel body. This advance in price has been made necessary by certain changes in construction.

What's that? Don't get service! Then don't waste any time about it, but write to our transportation expert, Editorial Department, of the "C. C. J.," Forty-ninth and Market Streets, Philadelphia, Pa., and let us tell you all about it, and help you out of your trouble.

PENCE AUTOMOBILE CO.
MINNEAPOLIS, MINN.
H. E. PENCE, PRES. AND TREAS.
BUICK



CHAS. W. PEARSON
VINELAND, N. J.
CHASE



MITCHELL MOTOR CO.
DALLAS, TEX.
W. H. CHILCOOT, MGR.
MITCHELL



MAMMOTH GARAGE CO.
READING, PA.
CARTERCAR SEITZ





HORSES AND COMMERCIAL CARS ARE NOT COMPARABLE

"Horses and commercial cars are not to be compared," is the statement of the manager of the Detroit Taxicab and Transfer Company, which operates ten two-ton commercial cars and sixty-six taxicabs in the city of Detroit, Mich., and, in view of the extensive experience of he who makes the statement, it may well be heeded. This official was engaged in trying out all kinds of commercial vehicles long before many now in the industry were ever heard of, and as to the trials and tribulations of other days, why, that is, of course, another story which will better bear telling at some other time.

It must be borne in mind that the remark is based on this service; not from the taxicab end of the business, but rather the transfer branch. This firm cannot do without commercial cars, for the reason that horses are not equal to the work. To begin with, the city of Detroit has expanded extensively in recent years, so that the limits are now six or more miles from the center. Obviously, a horse could not make a trip to the city limits, pick up a few trunks, stop on the way back, pick up some more, and make a train on time. If there is any article that must be had on the dot it is a trunk. Imagine an owner waiting at the station with the train about to leave and his trunk nowhere in sight. It is because commercial cars possess the speed that they are employed in this service. Troubles? Yes, the company have their troubles, just the same as others have had them, as all are bound to, until matters are adjusted properly.

The bulk of the outlying business of the Detroit Taxicab and Transfer Company is in the eastern and northern sections, which means considerable travel for the cars. The railroad stations are all about half a mile from the center of the city, and when the new station is completed, into which all trains are to be run it is said, the distance from the center will have been increased to a mile and a half. The cars in this service average forty-five to fifty miles a day. Where is the horse outfit that would do the same work and travel the same distance in the same time? Obviously, it is an impossibility for horses to do this work. The two factors in this service, then, are speed and distance; distance beyond the range of horse service and far greater speed to transport the load. When a traveler orders his trunk sent to the Michigan Central

Station to catch the Wolverine for New York, he wants it there on time; he can tolerate no delays. With the cars the distance is overcome and speed is to be had.

Horses Within Two-Mile Limit

Horses in this service are used chiefly within the two-mile limit, the cars, while doing city work, being confined to the more extensive operations. There are three factors that must be considered in close city work, where hauls are short, in this service: traffic



One of a Fleet of Ten Cars Used in Hauling Baggage From the Railroad Stations to the Hotels and Residences. These are blower air-cooled, four-cylinder type, and recently installed, the owners having set aside a number of the two-cylinder cars of less carrying capacity.

regulations, traffic blockades and number of stops. The statement is made by the official above quoted that commercial cars are not to be considered for downtown work. Horses are preferred and used for this. A wagon for this service will cost \$135, the horse \$150; so that, at the most, \$300 will provide an outfit, the driver of which is to be had for thirteen or fourteen dollars a week, and he works alone. On the other hand, two men work on the trucks; they are paid more, especially the driver, who usually claims to be a mechanic and therefore demands more money; and, if he is any good at all, why, obviously, it is worth while to pay him more and keep him. When one lets a good commercial driver go he is not certain of filling his place to the best advantage; not so by any means with the horse service. A commercial car here represents an investment of three thousand dollars, and because it cannot be used to the best advantage in the two-mile radius it is employed for the longer and harder work, where it shines to perfection.

ZELL MOTOR CAR CO., BALTIMORE, MD.
ARTHUR STANLEY ZELL, PRES. CHAS. H. HARIG, SEC'TY
HERBERT M. HARTMAN, ASST. GEN. MGR.
PEERLESS CHALMERS

RELIANCE AUTOMOBILE CO., SAN FRANCISCO, CAL.
SAMUEL GRIM, PRES. GEO. E. ERLIN, VICE PRES.
C. S. RICHARDSON, SEC'TY
DETROIT ELECTRIC KNOX

GLENWOOD GARAGE, RIVERSIDE, CAL.
C. A. DUNDAS, A. A. GAMBLE
PROPS.
STUDEBAKER BUICK



Purchase Ten New Cars

The concern has purchased ten new cars, which take the place of six machines which have been in service a little over a year, having been acquired when another organization was taken over. The old cars are of the two-cylinder opposed type, where the new vehicles are four-cylinder. The price at which these old cars will be sold represents a big depreciation.

That the company firmly believes in commercial cars is evident from the fact that ten larger cars have been purchased. The whole situation is simply this: horses cannot do the work, cars can; hence cars are used.

The manager of the company, when discussing his service with the writer, stated: "It all sifts down to the same old problem that is worrying everybody—the drivers. It is the same everywhere."

The company also operates fifty head of horses and state they are fortunate in having a good man to care for them properly; a man who has been in the horse business since he was old enough to toddle.

No comprehensive record has been kept of the old cars, but the new ones will be closely watched. Each car will be equipped with an instrument which tells the whole story on a tape: miles traveled, duration of stops and the like. It is a positive telltale system and has worked out successfully on the taxicabs of the company.

The statement is made, that with no governing device on the old cars the drivers drove as fast as they wanted to when no one could keep tabs on them, and well—this worked havoc. That the driver must be thoroughly known, that an accurate record of his movements is requisite, is fully appreciated. With the new telltale instruments there will be no beating the game. A driver will have to account for himself and cannot stop off on the road and visit his friends who are wont to polish the mahogany.

WHAT THE REPAIRMEN DID

A short while ago the COMMERCIAL CAR JOURNAL representative called on John Bruce, head of a big furniture house with reference to service. The car used in this instance was a two-ton, two-cycle affair and had done very good work. About a year ago our correspondent's acquaintance expressed himself as well pleased with the work done but on this latter occasion the tale was a shade different and it was not the fault of the car either. The owner was asked how things were going, and he finally said that he was having quite a time of it trying to keep the machine on the road. His own story which follows, best explains the situation. "I bought the car two years ago and found it very useful for long distance work and easily got eight miles to the gallon with a green driver. It was always on the move and the only cost for the first ten thousand miles was for gasoline, garaging and oil. I felt pretty well satisfied.

One day I was told that the car should be thoroughly overhauled and while it appeared to be all right to me I contracted to have the work done. Well, that was the beginning of my troubles. The car came back after the first overhauling and soon went wrong. To make a long story short, repairs for that car have cost me \$1000 in the past three months and it is not right yet. It ran nicely up to the time it was first torn down."

"Are you disgusted?"

"I certainly am, not with the commercial car for delivery but with the repairmen. I know that the car should be all right. I have not skimped on necessary repairs. I have had and still have a good driver, and he is careful. The whole trouble is with several incompetent repairmen. One of these told me after the other had taken the car down and claimed to have repaired it that the vehicle was in need of an overhauling. In the past three months the car has been driven 1000 miles. Previous to the first fatal overhauling it had run 10,000 miles without a miss. The front tires have lasted about 11,000 miles, the rear 10,000 miles."

"Will you buy another car?"

"We must have another truck and are going to buy it for country use."

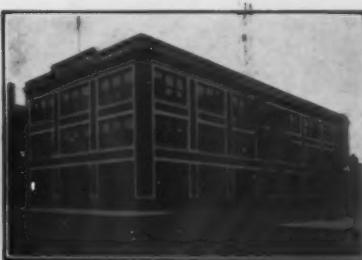
No I am not disgusted with the game for it is the proper thing, but I am disgusted with a certain element in this town who call themselves first-class repairmen. Why, the second week after the second overhauling, I had to have a complete new set of bearings. Again the bearings had been jacked up so tight that the crank shaft snapped, again there was ignition trouble and the coil was pulled apart and was not put back so a new one was needed. It is an outrage when you pay the price without a whimper and then get nothing for it. From my knowledge I am voicing the sentiments of other users in this city.

SAMPSON TRUCK MAKES RECORD TRIP

One of the longest motor truck household removals on record was made on May 14th by a Sampson motor truck, recently bought by J. Edwin Hood. The distance was 180 miles, from New York to Baltimore, Md., with a full load of household goods, and required only fifteen hours running time. The route included Trenton, N. J., and Philadelphia, making only one stop. The trip will be of particular interest to many persons who are watching the progress of long distance transfer work by commercial motor vehicles.

Fifty Brush runabouts have been ordered by the New England Telephone and Telegraph Company of Boston, for the use of the linemen.

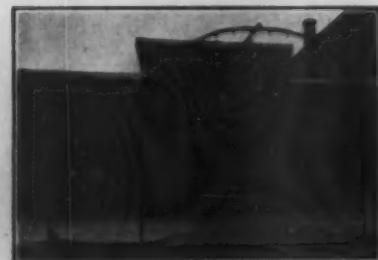
LOCOMOBILE CO. OF AMERICA, CHICAGO, ILL.
A. J. BANTA, MGR.
LOCOMOBILE



GOULD MOTOR CAR COMPANY, MOBILE, ALA.
A. L. GOULD, PRES.
WHITE



HENRY J. ADAMS
FORTOSA, OHIO
REO





Railroads and the Commercial Car

What British Railroads Are Doing With the Commercial Car

BY OUR FOREIGN CORRESPONDENT

The Great Western Railway

THE following is a brief outline of the experience of the leading railroads in Great Britain with motor transport. In the adoption of the automobile, British railroad companies have gone very carefully, having in the main preferred to leave the expense of experimenting to the bus owners. But though the experience gained by the big London street transport companies has been of untold value in developing the commercial car even on general lines, the conditions under which that experience has been obtained has necessarily been somewhat limited. The railroads, therefore, have largely had to find out for themselves how the conditions of country roads of all sorts may modify the problem of running heavy public service motors.

G. W. R. Developments

In this matter undoubtedly, the pioneer is the Great Western Railway Company, which on August the 17th, 1903, inaugurated the first public motor service operated by a railroad company in Great Britain. For this purpose two 16 h. p. Milnes-Daimler (the name by which German Daimler cars are known in Great Britain) wagonettes were used regularly between Helston and the Lizard—the most southwesterly point in England—over a road 11 miles in length, and as they seemed to meet with such public approval, a third car was soon added, and on March 1st of the following year a similar service, run by 20 h. p. 2-ton Milnes-Daimlers, was put on between Slough Station and Beaconsfield in Buckinghamshire, followed on May the 2nd by yet another service on a 12 mile

route between Plymouth and Modbury in Devonshire. After that, G. W. R. motor services came thick and fast, until at the present time the company is running them on no less than 31 different routes, ranging from 3 to 21 miles, and operates also regular services of observation cars for sight-seeing at New Quay and Falmouth in Cornwall, at Leamington, for the Shakespeare country, at Stoke Poges (where Gray wrote his famous elegy in a country churchyard) and the Chalfonts, Bucks, and sight-seeing trips round London. The type of observation car used for the London work, by the by, was instrumental in introducing the American word "rubberneck" to the English language.

Freight and Parcels Delivery

At their principal stations too, motor traction is used by the company for freight and parcels, where delivery is being dealt with under exactly similar conditions to those governing horse van work, except that the motor deliveries are of course effected much earlier. Besides this, should the goods or freight department require any special work, the motor department is usually called in to supply the necessary power with some of the 165 vehicles that they operate.

Passenger Bodies

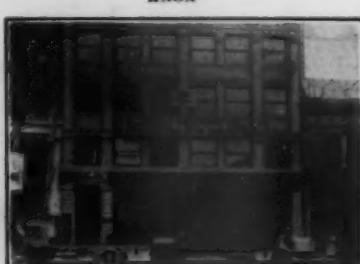
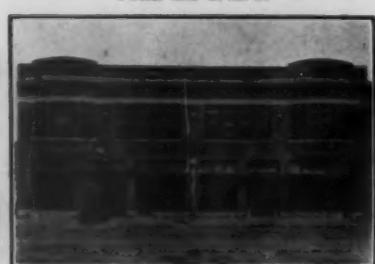
For passenger work various designs of bodies have been tried, and as a result five main standard types have been evolved.

Firstly there is the single deck body with longitudinal seats and platform at the rear. This accommodates 22 passengers mainly on the roof, 15 cwt. of luggage, a fixed ladder enabling the latter to be loaded on the top of the car.

TEDFORD AUTO CO., LITTLE ROCK, ARK.
W. L. TEDFORD, PRES. J. A. COMER, SEC.
J. B. PEARSON, TREAS.
OVERLAND GARFORD

HORST & STRIETER CO., ROCK ISLAND, ILL.
HENRY W. HORST, PRES. HENRY T. HORST, VICE PRES.
M. E. STRIETER, SECY-TREAS.
FORD AND G. M. C.

KNOX AUTOMOBILE COMPANY
NEW YORK, N. Y.
H. M. DAVIS, MANAGER
KNOX





Types of Bodies Used in Railroad 'Bus' Service

A. 1910 types of Milnes-Daimler with the type of body that is tending to become Great Western Railroad standard practice. B. an unusual type of side-entrance body with which the Great Western experimented

Next comes the double deck omnibus, very similar to those in use in London and in New York. It is similar to the first type, except that a staircase instead of a ladder affords access to the roof, on which are seats enabling the car to seat in all 36 passengers. Then there is the observation car type of body seating 27 passengers and driver, and fitted with a canopy and front entrance, while another type is of the same pattern but smaller, seating 16 passengers and driver. Lastly, there is the open char-a-banc body accommodating 30 passengers on folding carpet seats. Very successful experiments are also being tried with a small observation car body to seat 8 passengers.

On all except the small observation cars a driver and conductor are carried, but the 16 seat observation bodies, which are usually worked single handed, weigh under 2 tons, and so by law can be run at a higher speed than the heavier 3-ton cars; incidentally of course, the working cost is also considerably lower. These smaller cars have been found of great service in dealing with the tourist traffic in the summer months, and are equally useful during the winter in regular service with the lighter traffic then prevailing.

The Motor Service as a Railroad Feeder

Although Great Britain, with its small area is covered with such a net-work of railroads that no town is far from a railway depot (the longest distance that I know of is only 40 miles, and that in the far north of Scotland, and generally it is most unusual to find a village of over 1,000 inhabitants as much as 6 or 7 miles from the nearest depot), the road surfaces and gradients vary enormously, and especially in Cornwall and South Wales the grades are severe.

Opens Up New Territory

The services have enabled the Company to adopt sources of traffic that would otherwise have been out of their reach in places where the construction of a line would not be commercially justified, and they have also been most effective in opening up new beauty spots to the tourist. As the passenger vehicles also convey parcels and packages of goods, the motor promises also to do a good deal to help the small agricultural holder, who, if he takes advantage of the cheap rates and special facilities recently introduced by the company, is enabled to send his produce to new markets, while on the other hand new areas of supply are opened up to the public.

In remote districts too, the passenger cars can do much to afford improved postal facilities, since they work in connection with the train service.

Some Details of Operation

The motor cars in use by the Great Western Railway are operated under the control of the traffic department by what might be called a motor sub-department, with headquarters at Slough, some 18½ miles from the London terminus of the line at Paddington, and to Barnard Humphrey, who is in charge of matters at Slough, the writer is indebted for many instructive particulars of the working. Despite the large number of vehicles, these works at Slough, however, are of most modest dimensions,—a very practical tribute to the management.

Reports and Forms

At the end of each day the leading-driver has to send to the headquarters at Slough a report of the working of his

AVERY COMPANY
ST. LOUIS, MO.
AVERY



UNITED MOTOR—NEW CASTLE COMPANY
NEW CASTLE, IND.
SAMPSON



AVERY COMPANY, MINNEAPOLIS, MINN.
J. M. ORTON, MANAGER
AVERY

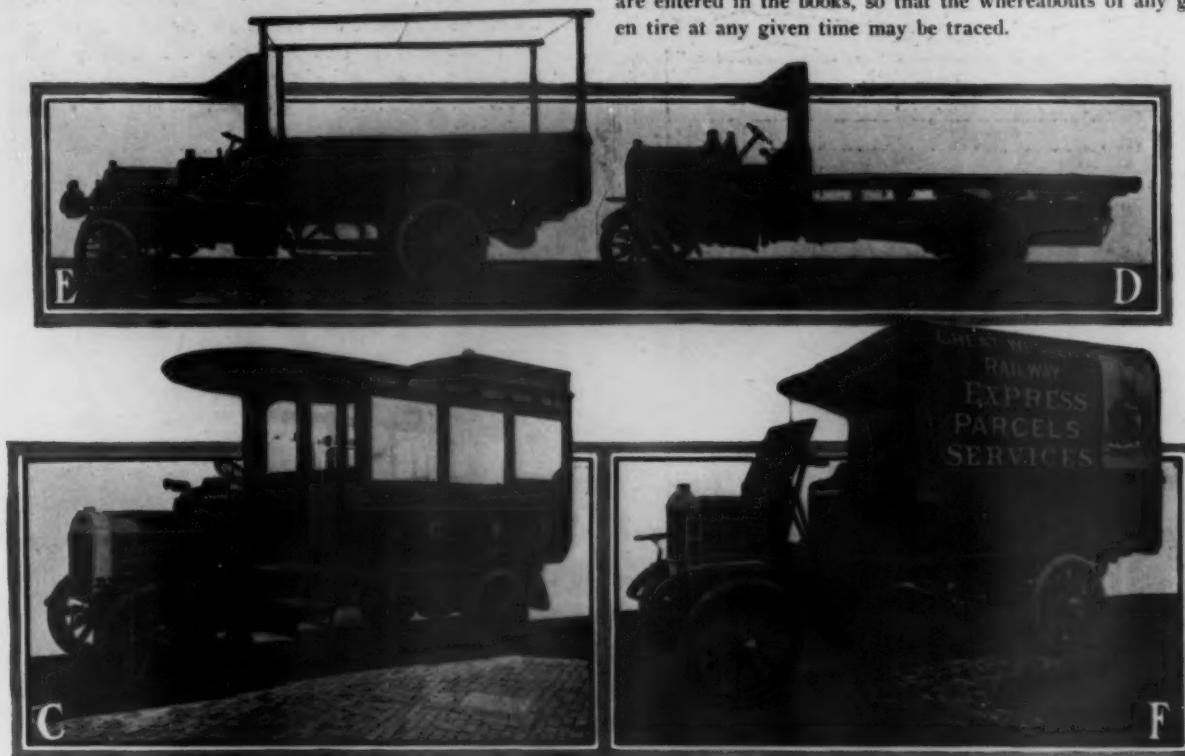


depot, and as the particulars that experience has shown necessary are instructive, a facsimile of it is given herewith, as also of the stores return that he has to send in weekly.

When an inspector goes down to a depot he is also required to initial this report, which thus to some extent acts as a check on the details of his work as given by his own reports.

that classification of the mechanism is somewhat arbitrary, seeing that under the differential heading such items as "frame," "springs," "steering" and "brakes" are included.

Inspectors' reports are filed on the card system, and in the managerial office hangs a board, sub-divided under heading giving the various depots, under which the leading drivers' reports are filed, while particulars of tires and so forth are entered in the books, so that the whereabouts of any given tire at any given time may be traced.



Group of Freight and Passenger 'Buses

C, a Dennis car fitted with front entrance, sixteen-seater bus body, having accommodation for luggage on the roof. D, a big five-ton Milnes-Daimler lorry. E, an old type of Milnes-Daimler chassis converted from passenger to freight work. Note the flap in bonnet to give access to carburetor. F, one of the handy little two-cylinder Straker-Squire parcels delivery vans. These cars run very quietly.

These inspectors' reports too are very instructive. For inspection work each car is practically divided up under four headings, three of which, applying to engine, gear box and differential mechanism covering the chassis, while the last applies to the body work, while space is also provided on the back for any notes, as for example, mention of the fact that, owing to modifications, special spares may be required;—but of this more anon. The particulars in these reports are so instructive that they are also given in facsimile with this article, and it will be seen, especially in the case of differential,

At each station a spare car is kept for emergency, so as to ensure the regularity of the service. The conditions of running in different parts of the country of course vary widely, but as a general thing the cars are taken in for overhauling after about 30,000 miles of running.

Overhauling and repair work is done at the Slough depot, whence also all spares are supplied. Although the cars employed by the company are a standard make, in certain of them, especially in the older types, modifications have been introduced as experience has dictated. For instance, the 16

MAR-DEL MOBILE CO., BALTIMORE, MD.
R. J. W. HAMIL, GEN. MGR.
PACKARD TRUCKS

CHASE MOTOR TRUCK CO., NEW YORK CITY
F. B. PORTER, MANAGER
CHASE

CITIZENS MOTOR CAR CO., CINCINNATI, O.
J. W. TARBILL, VICE PRES. AND GEN. MGR.
PACKARD



G.W.R.—17—5041.		(18-22)	
GREAT WESTERN RAILWAY.			
Motor Car Days.		Station.	
Daily Report of Car Working		day 191	
Car Number.	Working	Spares, &c. for Service.	
Work to be done on Cars out of Service, new parts required, &c. & provide time required for repair. (12 hours required from "Break" to "End")			
FAILURES.			
Car Number.			
Time Lost.			
Cause of Failure.			
Driver.			
Driver's Report Number.			
Tires Removed.			
Tires put on.			
Loading Driver.			
Remarks to be made on back.			
G.W.R. GENERAL STORES RETURN—DRIVER CAR DEPARTMENT.			
Work ending 191 <small>Driver Car Department, G.W.R.</small>			
Car No.	Consumption of Petrol during work stations.	Time taken for Petrol to be filled up.	
		Cylinder Oil used work (Gallons)	
		Time taken for Cylinder Oil to be filled up.	
		Total Consumption (Gallons)	
Total			
Item	Total Quantity on hand.	Quantity received during work.	Quantity required.
Petrol	Gall.	Gall.	Gall.
Lubricating Oil	Gall.	Gall.	Gall.
Gas Oil	Gall.	Gall.	Gall.
Grease	Lbs.	Lbs.	Lbs.
Waste	Lbs.	Lbs.	Lbs.
Carbide	Lbs.	Lbs.	Lbs.
Lamp Oil	Gall.	Gall.	Gall.
Crude Petroleum	Gall.	Gall.	Gall.
Body Cleaning Oil	Gall.	Gall.	Gall.
Metal Paint	Tins.	Tins.	Tins.
This figure should include quantities shown in next column.			
Loading Driver & Petrol.			

Forms Used by Foreign Companies

The records are most complete and the drivers have to sign each report

h. p. cars that were first employed on the Helston and Lizard service, are now fitted with 20 h. p. engines. In many cases these alterations have involved somewhat altered requirements

STANDARD AUTOMOBILE GARAGE
UNIONTOWN, PA.
PACKARD FRANKLIN BUICK

DELTA HARDWARE CO., ESCANABA, MICH.
W. R. SMITH, PRES. R. E. MCLEAN, VICE PRES.
W. W. OLIVER, TREAS.
MONITOR

PEERLESS MOTOR CAR COMPANY
CHICAGO, ILLINOIS
PEERLESS



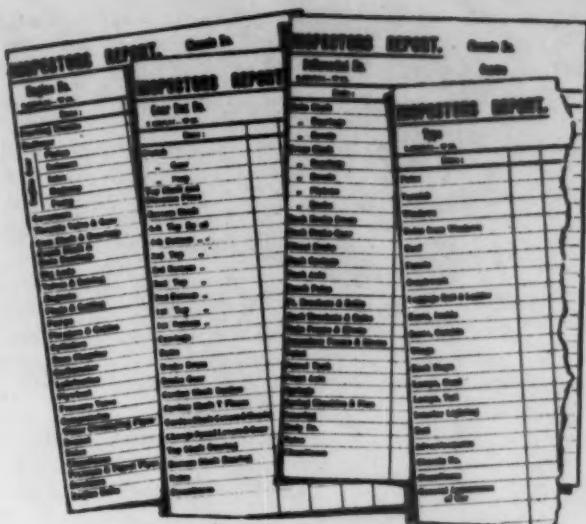
in the case of spares, and in such cases, notes of these are made on the back of the inspector's report dealing with the chassis in question.

The Suitable Type of Car

All the machines for carrying larger bodies are powerfully and very substantially constructed vehicles, weighing, with a double deck body, not much short of 5 tons. In view of the tremendous development of the London motor 'bus, under the 3½ ton police weight limit, I asked Mr. Humphrey how he thought such a type of vehicle would do on the G. W. R. provincial services. "Of course," said he, "it is very difficult—almost impossible—to say how they would stand up to the work until they have been in service for two or three more years, but they would certainly have to be built of the very best material. Although there is not the same amount of stopping and starting as in London, the work of many of our services is probably a good deal harder. On the Llandysil & New Quay services in Cardiganshire for instance, the amount of hill climbing,—and exceedingly steep hills too,—is simply tremendous in fact, for most of our services the 3 speeds of the London General chassis would not be enough; we must have 4 speeds for our larger work, owing to the hills, and partly for the same reason I am doubtful whether the worm driven live axle would be altogether satisfactory, for my own idea is that on low speeds the efficiency of the worm is not at its best, and owing to our hills the back axle would get plenty of low speed working."

Motor Services for Freight

Another question I asked of Mr. Humphrey was to what extent the G. W. R. were employing motors for goods carrying. Generally speaking, they are being used for delivery work considerably, in the more important population centres, but I was told that as yet they had not been employed largely for purely parcel work in the country, as the rates of the country carriers are very low, and the load as a rule is made up of so many small parcels, that it might frequently happen that the collecting of such parcels would involve an additional mileage quite out of proportion to the earnings involved. More especially was this true of small agricultural produce, such as butter, eggs and vegetables. For this business what is wanted is some system of co-operation by which the produce from a number of farms is collected at a given spot at which the car can load the whole lot at once. At Henwick in Worcestershire the company did encourage the co-operation idea by running a 5-ton Yorkshire steam wagon, which collected at a spot about 10 or 11 miles from the depot, but in such matters the railway people are usually faced with fluctuations in traffic, and though in the winter months other industries at other parts of the



Inspection Report Cards
Showing the detail with which the various items are kept

system may compensate for the slack time in agricultural produce, the question of working one in with the other, as can well be imagined, is so intricate that the development in this direction is likely to be very slow and gradual. Still a good deal of traffic in parcels of perishable freight is being built up by the passenger cars, which carry parcels at the usual freight charges.

The Motor as a Developer of Passenger Traffic

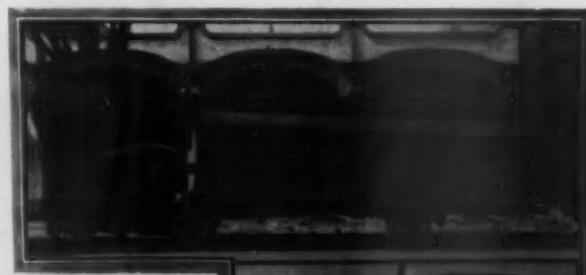
As regards passenger traffic, however, the success of the automobile has been much more immediate. One of the chief methods upon which railway companies rely for developing their traffic is by encouraging people to live as far away as possible from the big towns in which their business lies, and to this end to do everything to encourage the formation of residential centres as far as possible from the business centre. A good example of the influence of the public service motor in building up a residential neighborhood is afforded at Farnham Royal, some two miles or more from the railway depot at Slough, from which point a service of 7 trips a day is run. Since the institution of these motor services Farnham Royal has grown wonderfully, and is at present the home of quite a number of men who attend business daily in London. Then too, thanks to the Great Western motors, health resorts are being developed on parts of the coast to which no railway runs, and thus, and in many other ways, by encouraging facil-

ties of living, the railway is building for itself connections which may be the means of developing neighborhoods to the point at which a line becomes alike a necessity and a paying proposition.

For heavy freight work in towns the G. W. R. cars are giving quite a good account of themselves. As an example, the company have a regular and very heavy load of some 6 tons to be taken daily from Paddington to the Docks. The route is fairly level, and consequently four horses would be sufficient to haul it, but the journey each way would occupy them 3 hours; with a motor, however, it is only a one hour journey either way.

BODY BUILDERS USE COMMERCIAL CARS

The long bodied vehicles, seen darting about the streets of Detroit, have canvas sides and tops and are the contrivances in the service of one of the many body builders who supply the local chassis makers. The upper part of the illustration shows a favored method, using an ordinary pleasure car as a tractor with a carrying body mounted on a pair of wheels and attached to this tractor. As the bodies do not run to excessive weight the trailer method works out pretty well. Some of the builders use regulation trucks, one of which is shown herewith. This follows the same general plan as the trailer and it will be noted that there is considerable overhang at the rear which is necessary to gain the carrying space. In the truck shown the body is braced by steel rods extending from the end of the car frame to the body.



**Commercial Cars
Used by Body
Builders**

Pleasure car as tractor, with long canvas-topped trailer mounted on two wheels, used by body builders of Detroit. Some use the regulation truck shown, with overhang at rear.



ELLIS MOTOR CAR CO., NEWARK, N. J.
W. H. ELLIS, PROPRIETOR
PIERCE-ARROW



ABBOTT AUTOMOBILE CO., NEW ORLEANS, LA.
GINDER ABBOTT, PRES. PALMER ABBOTT, SECY-TREAS.
PACKARD AND BAKER ELECTRIC



PALACE GARAGE, NAPA, CAL.
A. ZELLER, PROP. J. C. JACOBSON, MGR.
REO





AVERY TRUCK STATISTICS

The Behrends Fuel and Ice Company, of Peoria, Ill., has placed an order with the Avery Company of the same place for a three-ton truck for ice hauling. This was done following a 4 day demonstration of the Avery Truck against three teams hauling ice from the foot of Spring Street to the foot of Harrison Street, a distance of 40 blocks per round trip.

Report of results obtained by the Behrends Ice and Fuel Company is submitted below. Being a demonstration and for a short period, results should not be generalized.

Avery Truck

Monday, January 15th, 7 loads—28 tons	
12 gal. gasoline	\$1.20
1 1/4 gal. lubricating oil50
	\$ 1.70
1 day's time for operator	2.33
Tuesday, January 16th, 10 loads—42 tons	
13 gal. gasoline	\$1.30
1 1/4 gal. lubricating oil60
	\$ 1.90
1 day's time for operator	2.33
Wednesday, January 17th, 10 loads—42 tons	
13 gal. gasoline	\$1.30
1 1/4 gal. lubricating oil50
	\$ 1.80
1 day's time for operator	2.33
Thursday, January 18th, 9 loads—38 tons	
12 gal. gasoline	\$1.20
1 1/4 gal. lubricating oil60
	\$ 1.80
1 day's time for operator	2.33
Total loads hauled, 36.	
Total number of tons hauled, 151.	
Total expense of four days, \$16.52.	
Cost per ton hauled, \$.109.	

Three Two-Horse Teams

Monday, January 15th, 11 loads—27 tons	
Feed for 3 teams and expense for drivers.....	\$10.50
Tuesday, January 16th, 17 loads—32 tons	
Feed for 3 teams and expense for drivers.....	\$10.50
Wednesday, January 17th, 13 loads—26 tons	
Feed for 3 teams and expense for drivers.....	\$10.50
Thursday, January 18th, 14 loads—30 tons	
Feed for 3 teams and expense for drivers.....	\$10.50
Total amount of ice hauled, 115 tons.	

HOUSTON MOTOR CAR CO., HOUSTON, MASS.
E. T. BARDEW, PRES. AND TREAS.
C. F. GYDESON, VICE PRES. AND GEN. MGR.
E. B. BARDEW, SEC'TY
PIERCE-ARROW G. M. C.

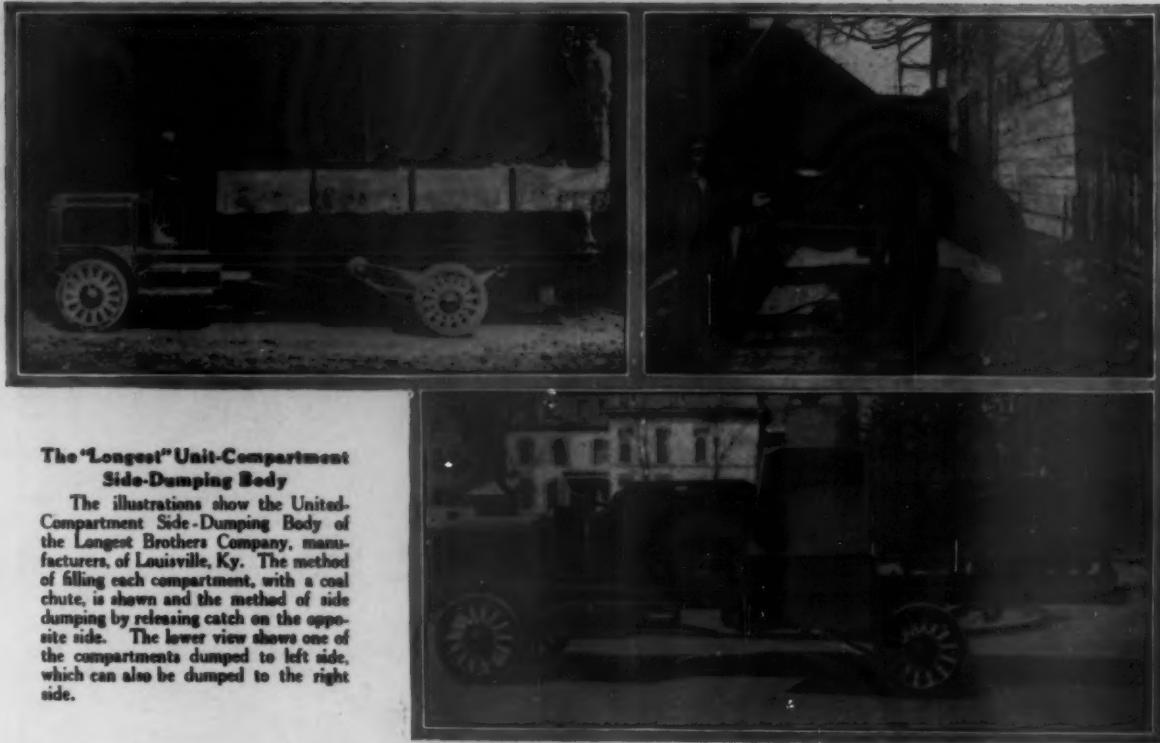


H. E. WILCOX MOTOR CAR CO., MINNEAPOLIS, MINN.
H. E. WILCOX, PRES. J. F. WILCOX, VICE PRES.
G. W. LEWIS, SEC'TY & TREAS. J. H. SHIELDS, SALES MGR.
WILCOX TRUX



PATERSON VEHICLE CO., PATERSON, N. J.
E. A. COOPER, PRES., M. A. HALLETT, V. PRES. & TREAS.
A. E. COOPER, SEC'TY
INTERNATIONAL HARVESTER





The "Longest" Unit-Compartment Side-Dumping Body

The illustrations show the United-Compartment Side-Dumping Body of the Longest Brothers Company, manufacturers, of Louisville, Ky. The method of filling each compartment, with a coal chute, is shown and the method of side dumping by releasing catch on the opposite side. The lower view shows one of the compartments dumped to left side, which can also be dumped to the right side.

RULES GIVEN TO DRIVERS FOR LOADING MOTOR TRUCKS

The importance of properly loading a motor truck and some rules for correctly distributing the load are emphasized by the American Locomotive Company in instructions to drivers of trucks.

Among the suggestions, contained in a chapter of the new Alco instruction book, are the following:

"Balancing the load is a big factor in the successful operation of a motor truck.

"Do not place all the heavy articles on the rear of the truck. If you place a heavy article on the rear of the truck, put an article of like weight on the front also.

"Do not place the load on one side of the truck. If the load is small, center it.

"If you have a small and heavy load, such as steel rails, use a small body. Have the body constructed so that the load will be centered.

"There was one case of a large dealer in structural steel supplies who used a platform body which extended over the wheels. The truck pulled up to the loading platform sidewise.

The shipping department employees, as a matter of convenience, pushed all the load of steel on one side. Of course, the springs on this side were weakened. The tires also showed abnormal wear on that side.

"If a tank body is used to haul over rough roads, it should be made only large enough to carry a normal load.

"Some drivers are unnecessarily hard on tires. The way the truck is loaded has a good deal to do with the wear. Balancing the load not only saves the tires and springs, but the driving mechanism also.

"Don't overload the truck. If the body is too big, don't load to the capacity of the body.

"When a horse is overloaded, he will not start. The load has to be taken off until he is able to proceed.

"When the power is applied in a motor truck, the truck will move, no matter what the load may weigh. It will do this even if greatly overloaded.

"But at the end of the season, when the truck is overhauled, poor judgment in loading tells. There will probably be many parts to replace that should not have been replaced for many seasons."

CRIST MOTOR CAR CO., COOPERSTOWN, N. Y.
ARTHUR H. CRIST, PROP. K. O. WOLCOTT, MGR.
PEERLESS
FLANDERS



FRED E. GILBERT CO., JACKSONVILLE, FLA.
FRED. E. GILBERT, PRES. ROBERT L. GILBERT, V. PRES.
WALTER MUCKLOW, SEC'T W. B. PREVATT, TREAS.
KELLY AVERY COMMER CHASE



GLEN FALLS AUTOMOBILE CO., GLEN FALLS, N. Y.
MILTON J. GRAY, PRES. H. C. PEARSALL, V. PRES.
CHAS. FENNELL, SEC'T
ALCO GRAMM KNOX



Use of Commercial Cars by Transfer and Express Companies

(Continued from page 16.)

sometimes delayed and got in very late, but the goods were delivered.

Motor Drivers More Intelligent

In this service each truck does the work of two double teams. The drivers are paid \$25 a week and supply their own helpers. The comparative cost as far as the drivers are concerned is about the same, as two horse drivers at \$12 each for two horse wagons displaced, amounts to \$24, as against one driver and helper at \$25, but a very much more intelligent class of men are employed, and as these men have to meet customers and collect, this is an important feature, and one which results in a general betterment of the business.

Motor Package Delivery by Trucks

Another interesting application of commercial cars is the Motor Package Delivery, of 707 Filbert Street, Philadelphia. This company came into existence owing to the fact that there seemed to be a field for quicker delivery than by horse methods. Four Autocars, three of which were of 1500 lb. capacity and one of 3000 lb. were purchased, two of these being mounted on 35 x 5 in. Goodyear pneumatic tires. Two Mercury trucks of 1000 lb. capacity each, were also purchased, and the business



Three Motor Package Delivery Wagons

The Motor Package Delivery Company, Philadelphia, operates six machines, three of which are herewith shown. Two of these are mounted on 35 x 5 inch pneumatic tires, which have thus far worked out very satisfactorily, even in this hard service. The machine at the right is on solids and the tires show excessive wear. A detailed picture of one of the tires is shown at another place in this article.

BENNETT AUTO SUPPLY CO.
SIOUX CITY, IOWA
R. A. BENNETT, PRES.
KNOX



PACKARD MOTOR CAR CO.
PHILADELPHIA, PA.
J. M. BUDLONG, PRES.
PACKARD



Half a Tire

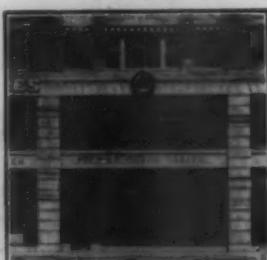
This picture shows the result of driving continuously in the car tracks. Almost one-half of this tire has been cut away by this practice, leaving the car without the protection that it should be afforded by a full-width tire.

started on the 5th of February, 1912. Delivery is made for small merchants who do not maintain any delivery system of their own. All kinds of goods, from iron to crockery and eggs are handled, and these small merchants are given a delivery system which in point of accuracy and speed could not be duplicated by them without a large expenditure each year. All this is done at a flat rate of 10 cents per package where there are many packages. Where there are but very few packages a card rate of 10, 15 or 20 cents a package is charged, and where heavier goods have to be hauled, special arrangements are made, although occasionally for regular customers boxes weighing 400 or 500 lbs. are handled without extra charge. The lower rate is charged where the car can pick up a load at one place instead of having to make many stops before a load is completed.

THE WHITE COMPANY
NEW YORK CITY
R. H. JOHNSON, MGR.
WHITE TRUCKS



PREMIER MOTOR CAR CO.
BOSTON, MASS.
HAROLD O. SMITH, PRES.
PREMIER

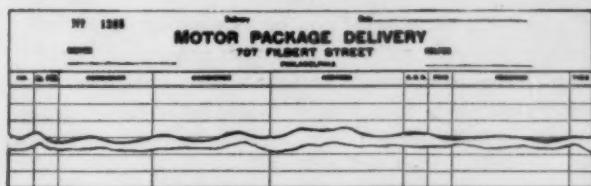


The cars are garaged at 46th and Regent Streets, a public garage owned and operated by the head of the Motor Package Delivery. From this point they report at the central office on Filbert Street at nine o'clock and one car immediately takes on a load of goods, collected the previous night, for a route to the northeast to Holmesburg, a distance of about eight miles. The other cars make collections over set routes, the down-town portion of the city being divided into sections. The packages are then arranged in route bins at the central office and distributed to the cars for delivery, the second car making its start about twelve o'clock. The last car leaves about 4:30 in the afternoon and all are done before 7:00, although occasionally during the very busy days or when the weather is bad they may not get in until 9:00.

Most of this business comes from merchants formerly dependent upon outside horse delivery systems. Owing to the fact that once or twice before, light parcel delivery companies using motors were operated in Philadelphia and finally failed, the present company occasionally has difficulty in persuading a business house to patronize this service. These early companies had much to contend with in the way of inexperience, both on the part of the management and the drivers, and on account of the failure of some of the early models. When these delivery companies failed their customers had to go back to the horse delivery companies, and some of them lost their old rate. These former experiences have made a few of the merchants hesitate to again try a new delivery company. However, in spite of these difficulties it is stated that the present force of cars has about all it can handle, and the company is competing with the horse delivery systems in the matter of prices.

Record Blanks

A blank put up in the form of a book with carbon leaf is supplied the merchant and a record of the packages collected, the address of the consignee, the number of packages, etc., and the address to which the package is to be delivered is kept and is signed by the driver receiving the package. Then there is a



Driver's Blank

Used by Package Delivery Company. This must be returned by the driver, signed by the receiver of the package, or the package must be returned. It also shows amount of C. O. D.'s and time of delivery.

blank which is herewith illustrated giving the name of the consignor, the consignee, his address, whether the package is paid or is a C. O. D., and a place for the name of the receiver. These blanks are carried by the drivers, the receiver signing same and entering the time. This forms a complete record of all the packages collected and to whom delivered and is very valuable in tracing packages which are received or cared for by next door neighbors, etc. The drivers must either bring back the goods or the signature of the person receiving same and each driver is placed under a bond, as these men also make collections. All collected monies are turned in to the Motor Package Delivery Company, which makes a record of same and delivers the money to the merchant.

This system, it is claimed, has worked out perfectly, no package as yet having been lost by any of the drivers. These men are competent to make all adjustments, and in the garage make their own replacements and repairs under the supervision of the garage foreman. They are paid from \$12 to \$14 per week, and in each case are men who have previously been connected with delivery systems and understand loading and handling of packages. It has been found that this is almost as important as knowing how to operate the cars, as inexperienced men cannot cover the ground with sufficient rapidity.

For emergency a car is kept in reserve and a touring car is stationed at the garage and is always ready upon 'phone call to bring parts or mechanics in the quickest possible time to the scene of trouble.



Five-Ton Truck Being Loaded With Oysters

Two of these large Saurer trucks are being operated in Philadelphia by John Kreutz, teamster, in hauling oysters from the markets at Front Street to the various restaurants and retail stores in Philadelphia and vicinity. Each of these machines is actually doing the daily work of three two-horse teams, and in winter keeps on the job when horses cannot cover the routes.

MERRITT J. OSBORN, ST. PAUL, MINN.
WHITE TRUCKS



Cars Used by Individual Expressmen

Individual expressmen also find it economical and a business getter to use commercial cars instead of horses. In Philadelphia the large five-ton Saurer trucks of John Kreutz, teamster, 316 South Water Street, are a familiar sight on the streets. These are used exclusively in the oyster business, hauling oysters from the main markets on South Water Street to the wholesalers and to the retail dealers and restaurants all over Philadelphia, the trucks going as far as Germantown and Frankford. The work was formerly done by about thirty wagons, and fourteen wagons are still employed. The surprising statement is made that each of these trucks does the work of three two-horse teams. In a single day's haul 531 bbls. of oysters were moved.

Mr. Kreutz says he used to be scared about winter, but does not know what he would have done this last winter without the trucks, and will never be scared again as to what a motor truck can do under severe winter conditions. He says they "do the work and go where horses cannot go."

The drivers are colored men, as they have been found to be less inclined to investigate and tinker with the mechanism and do not get it out of order or adjustment as often as some of the white drivers. These trucks travel regular routes, and Mr. Kreutz can tell very closely where they are at any time and when they should return, so he has not considered it expedient to equip the trucks with recording instruments. The trucks are operated without governors as these were taken off, being considered as simply an additional part to get out of order and cause trouble.

As this is a season business, the trucks are kept busy during the slack period by hauling shells to the furnaces which are also operated by Mr. Kreutz, these having a capacity of ten carloads per week. Here the shells are reduced and are sold for fertilizer and to glass, paint and varnish houses. About 250 bbls. of shells constitute a load, and some days as high as thirty-five wagon loads of shells are collected.

Two Sets of Men

In the winter two sets of men are put on the trucks. The machines go out as early as four o'clock in the morning and carry from the railroad fifty barrels per load to the markets. The first set of men get through about two or three o'clock in the afternoon and the second set goes on, finishing at about eight or ten at night. The trucks average from thirty-five to forty-five miles per day.

It is somewhat unusual for an individual teamster to purchase machines of such high initial cost, but the results have shown that there was wisdom in this purchase. Mr. Kreutz makes the statement that his next truck will be a seven-ton machine of the same make, and that he is well pleased with the results obtained by motor hauling.

A Suburban Express Line

This truck operated by Benson & Son, Philadelphia, runs between Philadelphia and points in Jersey, such as Haddonfield, Haddon Heights, etc. This one small Autocar is making



Philadelphia-Haddonfield Express

This one car is earning a good living for its owner and business is growing so rapidly that another truck will soon be put on

a good living for its owner, who does his own driving. The truck arrives in Haddonfield with express and freight before noon, which was out of the question with horses.

It takes the place of two double teams and averages about 70 miles a day. It is fitted with solid tires but is being driven at what must be called excessive speeds, often making on the smooth, level Jersey roads as high as 30 miles an hour. As the truck takes the place of two two-horse teams four horses have been displaced and the range of operations has been increased. The statement was here made that in one week after the truck was put in operation, which was but a short time ago, the trade picked up 25 per cent. due to its use, and is increasing so rapidly that it has been decided to put on another machine in the near future.

(To be continued in our next Issue.)

AUTOCAR COMPANY
BOSTON, MASS.
AUTOCAR



STUDEBAKER BROS. COMPANY
NEW YORK CITY
E. LOUIS KUHN, GEN. MGR.
STUDEBAKER



KLEIBER & COMPANY
SAN FRANCISCO, CAL.
GRAMM MODERN



A. A. LEDERMANN COMPANY
UTICA, N. Y.
PIERCE-ARROW



COMMERCIAL CAR FOR MOUNTAIN WORK

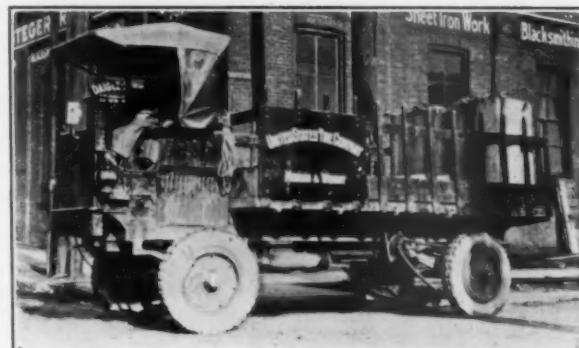
The power truck has entered the field of mountain hauling, something that most truck companies would fight shy of, so many are the difficulties to be overcome. Chief among the difficulties are the poor roads and steep grades coupled with sharp curves. But the Great Western Power Company, of San Francisco, Cal., has contracted with the Speedwell Company for a fleet of six-ton trucks to haul their goods from Keddie to Big Meadows, in Plumas county, a distance of 26 miles. Approximately 10,000 tons of cement are to be moved in 200 days, the cement to be used in the construction of the company's new storage dam at Big Meadows.

This work so far has been done by six and eight mule teams, it taking three days to make the round trip. The roads in the mountains are very narrow and many of the curves are treacherous. The problem of transportation by trucks is a vastly different one from the ordinary commercial work. It is proposed to run the trucks on a regular schedule, as a railroad. The drivers will also have to be educated to take certain curves at a certain speed, in some places the margin of clearance being so small. Turn-out places being few and far between, the trucks will be equipped with electric signals that can be heard for at least three miles, and warn other traffic to be on the lookout. The successful operation of the service is going to rest almost entirely on the drivers' intelligence, for with the use of trailers it is going to be doubly difficult to negotiate many of the curves.

In addition to the 10,000 tons of cement to be transported, there will also be the commissary supplies for the company's workmen, and upwards of a million feet of lumber. The number of trucks to be used will likely be six of the six-ton capacity and three trailers, although more may be added. Operations on the contract began April 1st. A model service camp has been established at Keddie by the Speedwell Company. About forty tons will be carried each day.

EXPERIMENTING WITH PNEUMATIC TIRES ON COMMERCIAL CARS

It is a common impression that substitution of pneumatic for solid rubber tires on commercial vehicles will effect greater economy in the long run. Some users of the lighter types of cars have gone to pneumatics after trying out the solids and vice versa. Some makers, as for example the Decatur Company, recommend pneumatic tires rather than solids, contending that the increased first cost is more than made up in the reduction of general wear and tear on the car due to vibration. At the present time much of the motor fire apparatus is equipped with pneumatic tires, though it is generally limited to the smaller sized wheels.



One of the Morgan & Wright Three and a Half Ton General Motors Company Trucks Fitted With 38 x 8 in. Pneumatic Tires. This is one of the company's three trucks so equipped for the purpose of testing the adaptability of pneumatic tires for the heavier cars.

Morgan and Wright Experimenting

Practically all of the tire companies are at present experimenting or have experimented with pneumatic equipment. A case in point is that of the Morgan & Wright division of the United States Tire Company at Detroit, Mich. Three General Motor Company trucks owned by this company are fitted with the Morgan & Wright nobby tread pneumatics, which are said to have offered very good results. They have three 3½-ton General Motor Company trucks, one of which is shown in the cut, also one of the front wheels is shown,



A Detailed View of the 38 x 8 in. Morgan & Wright Pneumatic Tire as Used on the Company's Trucks. This new adventure has found considerable success on their heavy trucks so equipped.

which has a 38 x 8 in. tread pneumatic tire. The weight of each truck is 8000 lbs., carrying from 6000 to 10,000 lbs. of freight. Owing to slight vibration, the chassis and machinery are preserved as is the case with an automobile equipped with pneumatic tires. They have given many demonstrations of their trucks equipped with pneumatic tires, at the rate of 15 to 18 m.p.h. over the roughest streets they could find and the trucks are claimed to have run as smoothly as a touring car.

The wheels are special built up steel type, having a special construction that is very much heavier than for ordinary equipment. The pneumatic proposition for large trucks may be regarded as being in its infancy. Some of the tire makers express the opinion that the larger pneumatics

AMERICAN AUTOMOBILE CO.
MILWAUKEE, WIS.
PIERCE-ARROW



UNITED STATES MOTOR CO.
NEW YORK CITY
SAMPSON



AVERY COMPANY, FARGO, N. D.
WILL ISHAM, MGR.
AVERY



will be used only where speed is desired and that at the proper rates of speed at which various sized trucks should be run solid equipment will meet the service. However, one way or the other it would appear that there will be an increasing demand for the pneumatic tire.

OVERHEAD LOADER SAVES TIME

Lumber is Accumulated on Loader While Truck is Out and is Ready on Return

A simple and effective overhead loader is that shown in an accompanying illustration. This is used at the Pope & Little Lumber Company yards, Chelsea, Mass.

Ostensibly such a device saves time in loading and therefore allows the truck just that much more time on the road.

Load Sorted While Truck is Out

Lumber for a given trip is accumulated on the loading crate while the car is on delivery, so that when it returns to the yards the load is ready to be shifted to the truck. As will be noted from the illustration, the load does not lie in a horizontal plane as is generally the case, but is

tilted backwards. There are wood rollers at each end of the truck body on which the load rests. These rollers, when it is desired to discharge the load, can be brought into action and thus simplify the work. The loading crate is raised or lowered by a chain type block and tackle, support being through four heavy hooks, one for each of the four corner braces. The load after being shifted to the car is roped to position and thus made fast.

The load shown consists of long boards and bundles of shingles. To pile this on the truck in the usual manner would take some time, whereas with this load collected while the car is on delivery, materially reduces the loading and idle periods of the vehicle.

Assuming that hand loading required a half hour at least and crate loading five minutes, the advantage is with the latter on a six to one basis.



Showing the load roped to the car and ready for delivery. Contrary to the usual practice the users tilt the load rather than laying it flat. The unloading rollers are controlled by ratchets.

Traveling overhead collection crate is shown, with the load assembled and lowered to the truck body. The device is worked by hand chains and is very much faster than the ordinary hand-loading methods. The truck body is fitted with rollers at front and rear which assist materially in load discharge.

MECKLENBURG AUTO COMPANY
CHARLOTTE, N. C.
GEO. A. HOWELL, PRES. WALLACE HOWELL, TREAS.
KRIT FRANKLIN ATTERBURY



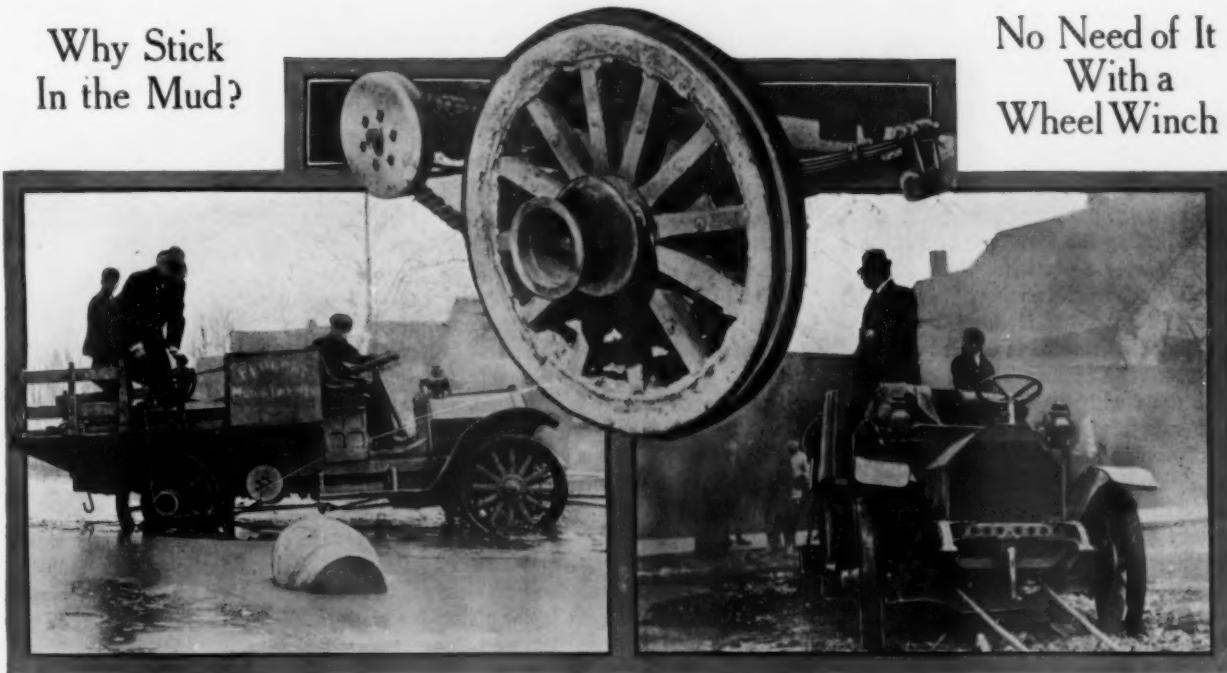
AVERY COMPANY
INDIANAPOLIS, IND.
FRED. W. GIGAX, MGR.
AVERY



C. C. CODDINGTON
CHARLOTTE, N. C.
BUICK



Why Stick In the Mud?



Showing how the winch is employed. As there is a winch on each wheel a good purchase is obtained, and the users state that it has worked out very satisfactorily. This is made of cast iron and it has proven useful on several occasions. The tire shown, by the way, has done 12,000 miles of service. The front view of the car shows the rope passed through loops in pads carried on the front axle. The rope also passes over a pulley on the under side of the running board and is thus spread and allowed to pass freely to the winch.

It frequently happens that a motor truck gets stuck in the mire and it is hard to get out, and the driver is up against a hard proposition. But there is no need of getting stuck, at least that is what L. C. Freeman, chief engineer of the Federal Motor Truck Company, states. As proof of the fact pictures are here shown of a Federal truck fitted with a pair of wheel winches by means of which it is stated the car can pull itself out of any hole.

As an engineering proposition this application will doubtless be much commented. The practice of this nature does not prevail in Europe, so it is said, and, as for American practice, Mr. Freeman thinks he is the only engineer using it.

The rope used is 1 in. diameter, and is passed through two eyes on the front axle, then over pulleys on the under side of the running boards so that from the pulleys to the winches the rope travels almost in a true line with the frame.

If you are in doubt as to where you can procure a certain part or accessory for your truck, advise us and we will tell you where it is made, and whether it is now on the market.

No Need of It With a Wheel Winch



Hauling a Load of Empty Cement Bags

This truck is used by the Tews Lime and Cement Company, of Milwaukee, Wis. It is giving entire satisfaction and besides replacing two teams it saves a dollar a day.

GENERAL MOTORS TRUCK CO.
KANSAS CITY, MO.
G M C



EGMAN BUGGY CO.
DECATUR, ILL.
SAMPSON



A. H. WILSON AUTO CO.
CANTON, OHIO
KELLEY CHASE



REAL SERVICE—WHAT IS MEANT BY IT AND WHAT IT MEANS TO THE OWNER

Many companies manufacturing commercial cars and also pleasure cars are advertising service, as an added inducement for the business man to buy a car of this make. With several commercial car manufacturers this word "service" means nothing. Service in the real sense of the word is representative of much hard work and great expense on the part of the dealer selling the car. It means more than the salesman running in with a pleasant "Good Morning, Mr. Business man, how is your truck running?" If it happens to be all right, all well and good, but if there is trouble Mr. Salesman, whose guarantee of service is carried out to the full extent of the word, usually excuses himself on pressing business. This article deals with the methods of one company. Every dealer who sells this truck is obliged to keep from one to three technical men in his establishment, the number of course varying with the size of his business. These men are all factory trained. They have been through a special course at the factory and have worked from one to three weeks in each department, the time required being about a year. Often these men have been in the business for several years with other companies. When a man has finished his course the technical department at the factory places him with a dealer, in New York, or perhaps Seattle, wherever there is an opening. Usually four to seven months are spent in the dealer's shop. Here the technical man learns the policy of the dealer. He is then placed on the floor as a competent technical service man. All this is in preparation to supply service, and is costly to the dealer and to the factory.

On the other hand the word service means to the customer, ability to get parts quickly. He likes to feel that he can get any part immediately. The part wanted may be a 1912 left steering knuckle or a 1909 clutch bearing, or any one of a hundred other odd parts. This requires an outlay of thousands of dollars on the part of the dealer. When the customer buys a part, paying what seems to him an outrageous price, he forgets that the dealer has a small fortune tied up in parts, some of which are not called for once in a year, perhaps never. Yet efficient service demands that every part be kept on hand.

One technical man spends all of his time visiting owners in his territory. The schedule is so arranged that every owner of this make is visited once every month, regardless of the year model of his car or truck. The technical man thoroughly goes over the motor, testing bearings, cleaning and adjusting the carburetor, cleaning and adjusting the magneto, examines the valves; the brakes may need slight adjustment, or the clutch slips. He inspects the oiling system and adjusts chains, sees that all parts are lubricated, that the oil in the crank

case, transmission and differential is up to level. He cleans spark plugs if necessary. In other words, he goes over the whole car and prevents trouble.

Driver Warned

If the driver has not been keeping the car up, he is warned, and a second offense means the owner is notified. A complete report is sent to the owner. This contains information as to just what condition the car is in. He is told if shop work is necessary. Many times the technical man will find small defects which the ordinary person would never detect. Frequently he has been the means of saving the owner many dollars in future trouble by a "stitch in time."

The other technical man remains in the garage to take care, not only for any local cars or trucks that the drivers may bring in, which they are free to do at any time, but tourists' cars are also included. In addition to this, once every year every car or truck in the country is inspected by factory men to double safeguard the customers, and this is all absolutely free.

This is what service really means. The simple words "we give service" painted on the walls of the garage do the customer no good; it is actual work they want, and if a concern is not giving the work mentioned in this article they are not giving service.



Hauling Paper to Treasury Department

This large Sampson Truck is employed regularly by Crane & Company Paper Mill, of Dalton, Mass., in hauling the paper on which the United States currency is printed, from the mill to the railroad station. The men on the machine are armed guards and one is an officer of the Treasury Department.

WOODWARD & LOTHROP, Washington, D. C., who have a large department store, have purchased six Baker Electrics for their delivery service.

FAIRCHILD AUTO CO., NEW ORLEANS, LA.
L. H. FAIRCHILD, PRES.
E. H. FAIRCHILD, SECY. TREAS.
PEERLESS

S. J. WHITE, VICE-PRES.
D. O. MYATT, MGR.
REO

BUICK MOTOR CO., CHICAGO, ILL.
F. W. WARNER, MGR.
BUICK



Two of the Six Fully-Proven "Firestone" Truck Tires



Hard Base—Channel Type
Furnished in Single or Dual Form



Side-Wire Block
Dual Form for Rear Wheels

Ten years' experience as leaders in motor truck tires is back of Firestone Truck Tires and Rims. Ten years of progress, step by step, has perfected them. Firestone, and not Firestone customers have paid for the experimental stage in all Firestone Tires and Rims.

We have a fully-proven tire for every Car, Load and Condition of Service. On regular rims or on Quick Removable rims for quick tire-changing *right on the spot*.

Hard Base—Channel Type

For resiliency in heavy service. This tire is vulcanized firmly into a channel with saw-tooth base. Consists of an extremely tough tread, cured to a hard rubber base.

The up-turned sides of the channel ensure the firmest possible base support against the tire working or tearing loose. Flat bands expand when in service, loosening the rim and tire; but the Firestone channel is too rigid to expand. At the same time it protects the rubber from side abrasion and allows it to wear down as long as there is enough left to give resiliency.

Side-Wire Block Tire

For traction, non-skidding and resiliency in heavy service. Has a continuous base, preventing abrasion from metal plates, as in other tires of this type. Worn or damaged blocks may be removed and new ones substituted without impairing the tire's strength.

Like the Hard Base—Channel type, it has all the advantages of Firestone quality of rubber.

Quick Removable Rim

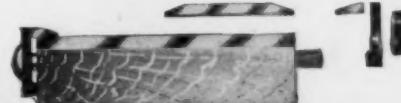
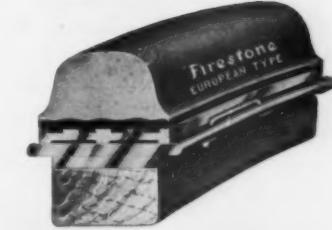
Over two years in successful use. The original and *only perfected* one of its kind. Does away with vital weaknesses now in others. Accomplishes *in practice* just what we say *on paper*: "Enables the driver to make a quick tire-change right on the spot. Does away with lay-ups for tire-changes."

Write for full information and guarantees.

The Firestone Tire & Rubber Co., Akron, Ohio.

"America's largest exclusive tire and rim makers"

More Than 100 Service Stations for Truck Tires.





"Everybody's Doing It"

This view shows what is typical of the trend of horse and automobile industry. This carriage and wagon dealer, as shown by the sign, is closing out at cost and less, his carriages, wagons, harness, robes, horse blankets, etc., as he has taken on the agency for a well-known and popular-priced runabout. This is very characteristic of what is happening all over the country.

CALIFORNIA NOTES

BY OUR WESTERN CORRESPONDENT

"Six months' use of the motor truck in our business has demonstrated several things to our satisfaction," states C. W. Dixon, manager of the Gibbs Transfer Company of San Francisco. This company operates a 1500 lb. White truck and a Stearns truck. The truck will do the work of two and a half teams at a great deal less expense.

It costs on an average of \$1.50 a day to operate the truck, covering gasoline, oil and light repairs. The machine will earn as high as \$50 a day and will travel as high as 60 miles in the course of a day. The trucks are kept at a public garage and light repair work is looked after by the men. The average cost per month including fixed expenses, insurances, depreciation, cost of help, etc., is set at \$225. In addition to the motor equipment, two double teams and a single are also operated.

T. H. Dohrland, of San Francisco, invested in a three ton Dayton truck last December to engage in the trucking business. He does his own driving and gives the machine his personal attention entirely. By doing this and his own garaging, he has found that he can operate the truck at an average expense of \$75 a month. His business is mostly the hauling of crushed rock and sand and the truck carries a side dump body which has many features to commend it.

The bed which is but 3 in. above the frame is actuated by a gear mechanism, operated from the driver's seat, and driven from the transmission shaft. The load can be dumped and the body returned to its natural position in the short space of 12 seconds. The device will tilt the body to an angle of 55 de-

grees. As most of the loading is done from hoppers, Mr. Dohrland is enabled to handle almost all his business without the assistance of a helper. Mr. Dohrland has handled as much as 22 tons of material in a day's time.

The Emmons Draying Company of San Francisco, operating two trucks and a light delivery car, have demonstrated that the light truck is a necessary adjunct to the express business in giving quick service and ability to cover a wide scope of territory. The motor truck service they added to supplement their heavy trucking service which they are handling with the horse drawn equipment.

G. F. McLeod, the manager, found in compiling figures on his Federal truck that on a mileage of 693 in January, the operating expense of the truck was \$20.87; in February the mileage was 667, the expense \$20.37; in March, 875 miles, expense \$20.68; and in April, 850 miles and the expense \$27.50. The salaries of driver and helper would add probably \$150 a month to these figures. The company garages its own cars and looks after the minor repairs.

CLASSIFIED ADVERTISEMENTS

A SUCCESSFUL COMMERCIAL CAR MANUFACTURING
company is open for a proposition for change of location. Some stock is for sale for the purpose of increasing the output, and desirable location is desired. This company is in position to prove to right parties, that it is a desirable acquisition for any city or town. It has the car, the machinery, and is now actively manufacturing, having an output of three cars per day. The factory now occupied is open for inspection, and the cars are ready for demonstration to satisfy interested parties. For particulars, address "NEW LOCATION"—this Journal.

RESPONSIBLE BUSINESS MAN WANTS GENERAL AGENT
cy for Philadelphia or larger eastern territory for good motor truck or accessories. Address "GENERAL AGENT," care of this journal.

MISSION GARAGE, SANTA BARBARA, CAL.
E. G. HAYWARD, PROP.
FRAYER-MILLER



BROWN-CORLEY MOTORS CO., DES MOINES, IOWA
WALTER S. BROWN, PRES., DEXTER W. CORLEY, TREAS.
FRANK A. MARTIN, GEN. MGR.
KELLEY



TRI-STATE GARAGE CO., UNIONTOWN, PA.
R. M. CAMPBELL, TREAS. JOHN C. SHAW, MGR.
WHITE AND FORD





Adams Express Co. purchases a fleet of GMC gasoline trucks for Philadelphia service and a fleet of GMC electrics for Detroit

Big transportation companies know the value of motor trucks. In *their* business, *transportation* is the thing sold, and the thorough and costly investigations which have been made show that the motor truck earns a greater profit than the horse-and-wagon equipment.

What better argument or evidence for the merchant or manufacturer whose problem of hauling or transportation is an important element in the business?

It is an interesting fact that this is the *first* instance in which the Adams Express Company—probably the largest single user of motor trucks—has been able to purchase both gasoline and electric trucks from the same manufacturer.

Motor trucks do pay in every line of trade. The chief consideration now is the selection of the correct type of truck for the particular kind of service required.

The gasoline and electric truck each has its field; each in its special work can show economy over the other.

General Motors Truck Company can fill any truck requirement, because it *alone* produces both gasoline and electric trucks in all standard capacities from 1000 lbs. to 6 tons. It can afford to *advise without bias*.

Beyond even this vitally important question stands the responsibility of the maker. Behind every GMC truck and behind GMC service stand the financial resources and engineering ability of General Motors Co.

Know GMC trucks. Investigate them thoroughly. We will mail gasoline or electric catalogs—*or both*—on request.

Correspondence from prospective purchasers and dealers is invited.

GENERAL MOTORS TRUCK COMPANY

DETROIT, MICHIGAN

Branches: New York, Chicago, Boston, Philadelphia, Kansas City, Detroit

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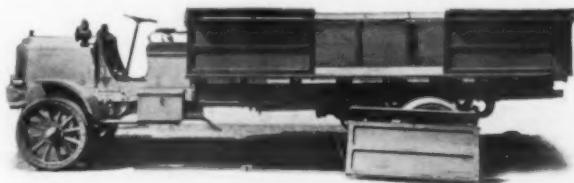
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SMALLER TOWNS PROMINENT IN SALE AND USE OF MOTOR FIRE APPARATUS

Motor fire apparatus seems to be in demand chiefly among the smaller towns, where calls are few and far between and service stations are necessarily isolated. While New York and other large cities have gone into the proposition more or less extensively, the less populous communities have been backward by no means, as for example, Youngstown, O., is said to have recently appropriated \$75,000 for motor fire apparatus.

Time is everything in fire work and it is because that economy in time and expense is effected that the up-to-date apparatus is gaining ground. Some of the more conservative departments desire to be shown just a little more before they will venture to purchase equipment. One of the latest installations of motor fire engines is that of an Ahrens Fox double acting piston pumper for the Detroit department which in test

lifted 963 gals. per minute, so it is claimed. The prime mover is a six cylinder, four cycle gasoline engine, Brownell make.



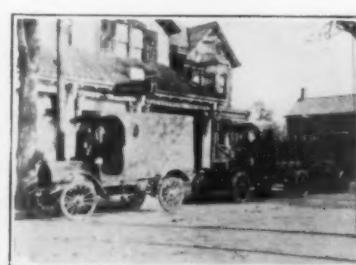
Express Type Body on Packard Chassis

This view shows an express type body as built by the Motor Truck Body Company, of Detroit, Mich. A side gate can be seen removed for the purpose of loading. This body has both side gates and rear gate removable, so that goods can be loaded from either side or rear, as may be beneficial to loading. It has been quite favorably accepted, inasmuch as you can drive up a narrow road and load or unload from the side gate without backing in the driveway.

AVERY COMPANY
BILLINGS, MONT.
H. G. PINE, MGR.
AVERY

BACON'S GARAGE CO.
HACKENSACK, N. J.
JAMES BACON, PRES. A. L. BACON, SEC'Y AND TREAS.
ATTERBURY

GRAMM MOTOR TRUCKS
PHILADELPHIA, PA.
A. T. GARDNER, MGR.
GRAMM



The Man Who Buys the Federal Always Buys the Federal Again



This is the second Federal Truck that the Hupp Motor Car Company has bought within the year

Federal one-ton chassis, including seat, \$1800. Body type at purchaser's option. Wheelbase, optional, 110-inch or 144-inch. Motor, 4-cylinder, 30 horsepower; Magneto, high-tension; Clutch, 16-inch cone; Transmission, three speeds forward and reverse; Hyatt high-duty bearings; Tires, solid, 36 x 3½-inch front and 36 x 4-inch rear.

The best customers of the Federal are motor car manufacturers, designers and engineers. Do you grasp the significance of that?

THE FEDERAL

The best advertisement in the world is the act of the man who repeats his order.

The Abbott Motor Car Co. got their first Federal truck Sept. 20, 1911, and their second Federal truck March 30, 1912.

The Detroit City Gas Company bought their first Federal truck June 23, 1911; their second July 6 and their third August 29.

The Gemmer Mfg. Co. bought their first Federal truck August 22 and their second March 12, 1912.

Beecher, Peck & Lewis got their first Federal truck Jan. 12, 1912, and the second March 14, 1912.

These are all firms operating in Detroit, Mich. They have figures recording in dollars and cents the durability, the reliability, the efficiency and the economy of the Federal. That is the reason they bought a second and a third Federal truck to *Reduce the Cost of their Deliveries*. Write for those figures.

Those cold, convincing figures brought these manufacturers, merchants and engineers to the logical conclusion that the Federal—

ONE-TON TRUCK
— \$1800 —

at \$1800—is pre-eminently the cheapest as well as pre-eminently the best Standard One-Ton Truck on the Market.

And here is a *Partial List* of the manufacturers, jobbers and distributors in various parts of the country who have repeated their initial orders for the Federal Truck.

The Portland Railway, Light & Power Co. of Portland, Ore. has eight *Federals*.

The Star Carriage Co., of Seattle, Wash., has four *Federals*. The Witherbee, Sherman Co., of Mineville, N. Y. has two *Federals*. Haggard & Marcusson, Chicago, three *Federals*; Walthers-Williams Hardware, The Dalles, Oregon, two *Federals*; J. Cunningham, Rochester, N. Y., two *Federals*; Emmons Draying Co., San Francisco, two *Federals*; Motor Bus Transit Co., Gary, Ind., four *Federals*; Marshall Field Co., Chicago, two *Federals*; American Bank Note Co., New York City, two *Federals*; J. F. Grantham & F. M. Stultz, Gary, Ind., two *Federals*; Lemp Brewing Co., St. Louis, two *Federals*.

We can offer no better selling argument than the names of these scientific men, these close-buying men, these hard-headed business men who have tested, accepted and endorsed the Federal and Come Back for More.

Federal Motor Truck Company Leavitt and Campbell Avenues **Detroit, Mich.**

SAVE OPERATING COST THE FAMOUS “DISCO” SELF-STARTER

which has been so universally adopted by pleasure car manufacturers and the public using pleasure vehicles, is fast being appreciated by owners and manufacturers of commercial vehicles. It is a fact shown by carefully prepared records that 75% to 80% of the service time of a motor truck is consumed in loading, unloading and checking in and out of the loads. The present custom is to leave the motor running during this idle time, not only consuming gasoline and oil, but producing a perceptible wear and tear on the motor. This terrific waste can be eliminated by the use of the DISCO Self-STARTER, which may be easily and quickly applied to any multiple cylinder gasoline truck and which is so simple to operate that any driver can readily use it.

The initial cost is so low that the saving earned in the first 30 days of its operation will pay for a DISCO STARTER.

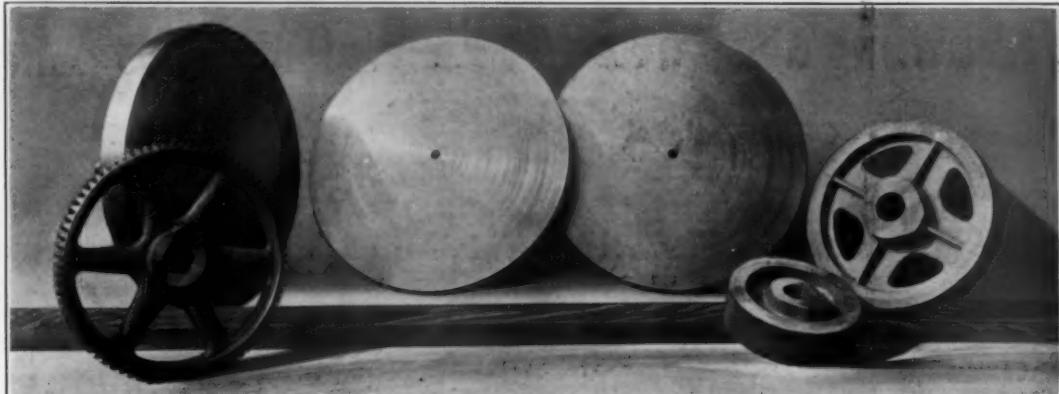
Ask us for full particulars in regard to equipping your particular trucks.

Give us the make and model of the trucks which you are using and the class of work in which they are being used.

In buying new trucks, demand the DISCO Starter as a part of the equipment. It is really

AN EARNING POWER

Ignition Starter Co., 708 Dodge Bldg., Detroit, Mich.



Pivot Discs and Gear Wheels for Emergency Dams, Panama Canal, made of
CRAMP'S BEARING AND GEAR BRONZES

TESTS MADE BY THE U. S. GOVERNMENT

Tensile strength - - - - - 122,000 lbs. per sq. in.
 Elastic limit under tension - - - - 89,000 " " "
 Elastic limit under compression - - - - 58,000 " " "
 Permanent set at 100,000 lbs. per sq. in. compression, .014"

The above figures are the most remarkable ever obtained with bronze bearing metals and gear metals. Each revolving pivot disc

43 inches diameter supports 7,000,000 pounds. Our experience in important engineering work of this character and in other lines equally important will be useful to you in furnishing bearings for your trucks. If you are contemplating using worm drive gearing for your axles our gear metals will be of great service to you. We believe you will use this construction ultimately if not now.

Our guarantee of quality, uniformity, and fair treatment is back of every casting sold.

The Wm. Cramp & Sons Ship & Engine Building Co., Philadelphia, Pa.

L A V I G N E

Steering Gears

POSITIVELY

No Back Lash
 No End Thrust
 No Loose Parts

Takes Up Automatically

FOR TRUCKS

DELIVERY WAGONS

TAXICABS

THE LAVIGNE GEAR CO.

Corliss, Wisconsin

Positive
Compact
Dust-Proof
Irreversible



COMMERCIAL CAR

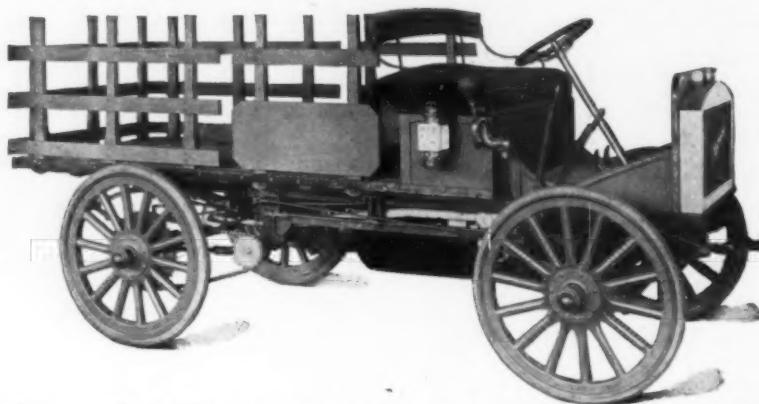
IS STAMPED ON
EVERY PART
AND PARTICLE

OF THE *"Little Giant"*

Not in visible letters but in the MARKS OF QUALITY; in the SIGNS OF STRENGTH; in the SUBTLE INDICATIONS of fitness for the purpose intended

CAPACITY
ONE TON

EIGHT
STANDARD
TYPES
OF BODY



SEND FOR
BOOKLET
No. 96
"The Heart
of the
Little Giant
Commercial
Car"

CHICAGO PNEUMATIC TOOL COMPANY

1010 FISHER BLDG.
CHICAGO

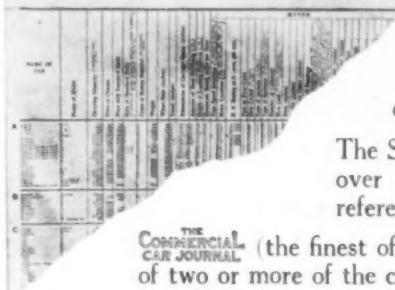
BRANCHES EVERYWHERE

50 CHURCH ST.
NEW YORK

These Two Important Publications for the Price of One

1912 Table of Specifications

Price \$1.00 Issued by the



← AND →

are offered together to new subscribers to
THE COMMERCIAL CAR JOURNAL This plan will last only
 until the limited supply
 of Specification Tables is exhausted. Another
 edition will not be printed this year.

The Specifications show at a glance every detail of
 over 300 models of cars, and are invaluable for
 reference purposes.

THE COMMERCIAL CAR JOURNAL (the finest of its kind in the world) each month contains illustrated descriptions
 of two or more of the cars listed on the Table of Specifications explaining the class of work
 for which they are best adapted and how to use them efficiently and economically.

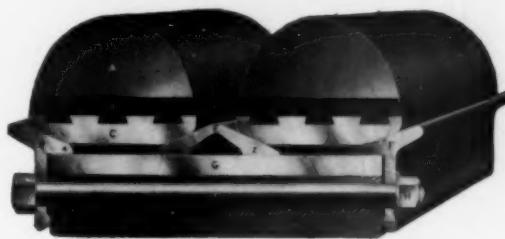
By ordering **THE COMMERCIAL CAR JOURNAL** at once subscribers will be sure of receiving the Specification Table.

A small supply of the list of 5000 well-rated commercial car owners is still on hand. Could you use a copy?
 Write us for information concerning these offers. It will be well worth your while.



CHILTON COMPANY, Publishers, PHILADELPHIA

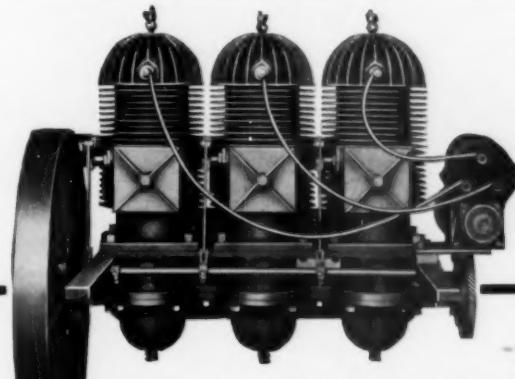
The
**United States Standard
 Motor Truck Tire**
 (Demountable)



has established standards of tire economy never before known.

No more delays while tire replacements are being made. Changes can be made by the driver **anywhere** in fifteen minutes' time or less. Guaranteed for 10,000 miles if used in one year. Write us for descriptive literature.

United States Tire Company
 New York



AT LAST
 The Perfect Two-Cycle Motor with
 Variable Port-Areas

The essential feature of Moore Motors is the increasing or decreasing of all the port-areas simultaneously (fully patented), giving flexibility of control and fuel economy.

(Fixed ports, as in regular two-cycle design, mean lack of flexibility and high fuel consumption.)

The result is a power plant combining two-cycle simplicity and low upkeep cost, with four-cycle flexibility of control and fuel economy.

Moore Motors are backed by years of engineering experience. Send for descriptive circular.

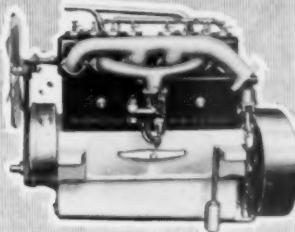
PALMER-MOORE COMPANY
 SYRACUSE, NEW YORK

YOU wouldn't expect a race horse to do draft horse work. Then why expect satisfactory Truck service with a pleasure-car motor?

Truck work requires a motor with a capacity for continuous hard work. That is efficiency—and is exactly what you get in the Waukesha Long Stroke Truck Motor. It's a "make good" motor that gives the truck manufacturer full confidence that his truck will do all he claims.

Strength—long wear—economy of fuel—the ability to work under all conditions—those are what you get in every

WAUKESHA
 4 $\frac{1}{4}$ x 6 $\frac{3}{4}$ " LONG STROKE TRUCK MOTOR



Waukesha Motor. The crankshaft has a tensile strength of 70 tons. The bearings have three times the wearing quality of ordinary bearings. Let us prove the Waukesha Motor's supremacy. Ask us in the next outgoing mail.

WAUKESHA MOTOR CO. Dept. A. WAUKESHA, WIS.

GRAMM TRUCKS

The Gramm Truck is built in the largest exclusive motor truck factory in America.

It is produced by men who have built motor trucks since the beginning of the truck industry, and represents their combined experience for more than ten years.

Gramm Trucks are used in more than two hundred different lines of business; the line is complete and there is a truck suited for your business no matter what it may be.

If you have a transportation problem to solve, the assistance which the makers of the Gramm can give you will be invaluable.

Write and state the conditions of your delivery problems—their nature, etc. An investigation will more than convince you of the saving which can be made.

THE GRAMM MOTOR TRUCK CO.
 129 So. Lima Street - Lima, Ohio, U. S. A.

Exclusive Motor Truck Builders

MERCURY TRUCKS

1000 lbs. Capacity

The result of 10 years' experience proves it not an experiment.

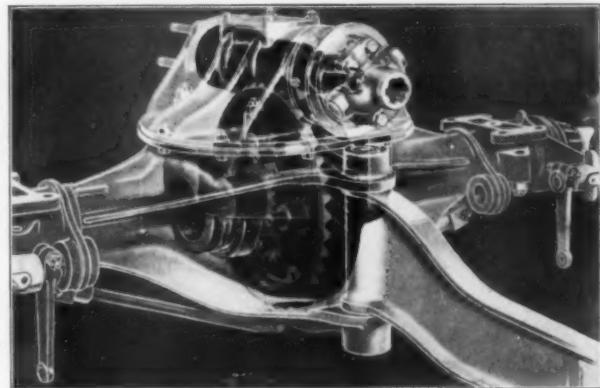
You may as well buy now.

Our product is standard, changes are unnecessary, and there will be no yearly models.

Manufacturers not assemblers.

The Mercury Manufacturing Company

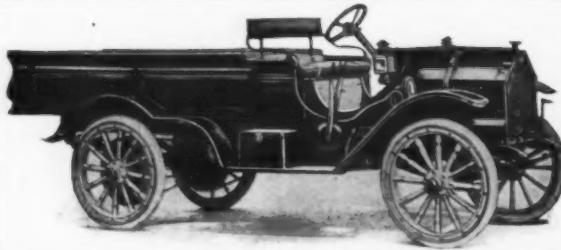
4106 S. Halsted Street, Chicago, Illinois



That the worm gear drive is the least wasteful and most durable pathway for power has been proved during ten years of successful use in England—is being proved every day in America by the Pierce-Arrow Truck.

PIERCE-ARROW 5-TON MOTOR TRUCKS

THE PIERCE-ARROW MOTOR CAR COMPANY, BUFFALO, N. Y.



THE LAMBERT MOTOR TRUCK

The first investment is not the most important consideration in the purchase of a motor truck. It is important that you study the construction—what will it cost you in time and money to get like results from different types of cars?

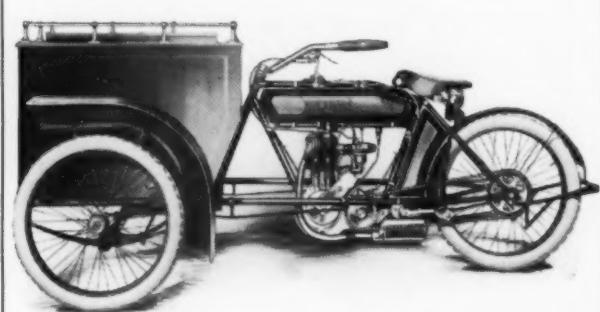
The Lambert Patented Friction Drive will give you more service at less expense than any truck built. This is apparent by studying the illustrations in this advertisement. That on the left shows the usual form of power transmission. That on the right the Lambert Patented Friction Drive. Six expensive complicated units, as compared to two simple components. Granted that the results from the gear transmission are equal to the friction, which is the more economical? The cost of lubricating oil alone in the one on the left, will amount to more than the replacement of parts on the Lambert Friction Drive.

The Lambert is trouble proof, and cannot be damaged by carelessness or inexperience. It overcomes the chief objection to commercial cars.

We have prepared some very interesting literature for you. A card brings it to you.



The Buckeye Manufacturing Co.
146 Columbus Avenue
ANDERSON, INDIANA



Minneapolis Light Delivery Cars

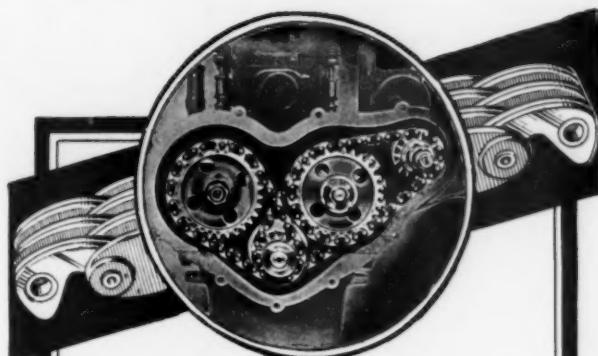
Solves Your Light Delivery Problems

Quick Reliable Efficient

Capacity 300 pounds. Three point suspension unit power plant, 5 H. P. motor, two speed transmission, multiple disc clutch and free engine. Clutch control on handle bar. Simple to operate, and built to give satisfactory service to owners at an expense of **one cent per mile**. Motor can be started while machine is standing. Handles the same as an automobile. Initial cost and upkeep small. Catalog and literature on request. Our traffic department will analyze your delivery problem for you without obligation. Correspondence solicited with dealers in unoccupied territory.

PRICE \$375

The MINNEAPOLIS MOTORCYCLE CO., Inc.
Manufacturers
517 South Seventh Street, Minneapolis, Minn.



*Coventry Noiseless Chains as Used
on "Benz" Engines*

COVENTRY NOISELESS CHAINS

Have been the standard of Europe for many years. These chains run with remarkable accuracy and precision, their construction and design make them positive and flexible.

Standard equipment on the following cars: **Daimler, Deasy, Humber, Maudslay, Benz, Arrol-Johnson, Vauxhall, etc.** Write for full description and details.

UNITED STATES REPRESENTATIVES:

Sarco Engineering Co., 110 Broad St., N. Y.

COVERT

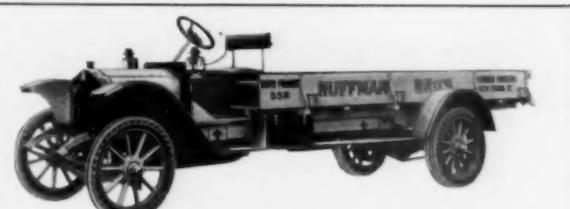
The efficiency of Covert Unit Transmission Plants has been proven. You are not experimenting when you equip your cars with the COVERT. We guarantee every one. This part of your car you can safely leave with us.

Our manufacturing plant is equipped with tools and machinery designed for a single purpose,—building transmissions. This enables us to produce highest quality at a cost lower than you can make them yourself.

May we figure with you on your plans?



Covert Motor Vehicle Co.
Sales Office: Ford Bldg.
Detroit, Mich.
Factory: Lockport, N. Y.



THE COMING COMMERCIAL CAR TIRES

Tires, once the bugbear of every commercial car owner, are now coming to be the **least expensive and troublesome part of commercial car equipment.**

Makers and owners of motor trucks are saying goodbye to treacherous, expensive **pneumatic** tires and to heavy, jolting **solid** tires. They've at last found a tire with all the virtues of a pneumatic and none of its faults—the Mota Cushion Tire.

In twelve months nine leading commercial car makers have adopted this tire. Thousands of truck owners are using it. It is the coming commercial car tire.

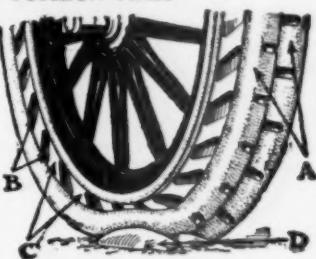
MOTZ CUSHION TIRES

end puncture and blowout troubles. Save power. Protect the delicate mechanical parts of the car. Save repair cost. Are **guaranteed** for 10,000 miles—two years. Fit any standard clincher, universal quick detachable or demountable rim.

Mota Cushion Tires are lively as pneumatics, because they have double, notched treads (see A) which prevent skidding and distribute the weight to the sides. The undercut sides (see B) allow free action of the bridges (see C). The bridges, being slantwise and elastic, give and yield like the air in pneumatic tires. Drop us a line to-day, stating make and model of your truck. Please ask for booklet 85.

THE MOTZ TIRE & RUBBER COMPANY

Factories and Executive Offices: **AKRON, OHIO**
Branches: 1737 Broadway, New York; 2023 Michigan Ave., Chicago; 999 Woodward Ave., Detroit; 2352 Euclid Ave., Cleveland; 409 East 15th St., Kansas City, Mo.; Standard Tire & Rubber Co., 104-6 Portland St., Boston, Mass.; Distributors for New England States.



A—Shows double, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.

Rattle-Rattle-Rattle

off goes the cap of nearly
all Grease Cups

RATTLE FOREVER but the cap of the M. & E. GREASE CUP

STAYS ON

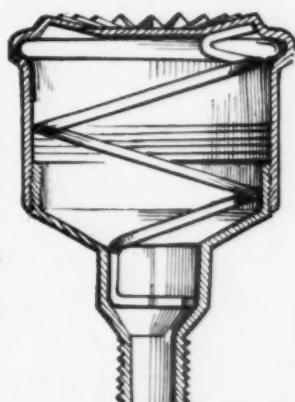
WHY?

See the Spiral Wire
catching the Cor-
rugations

SHORTEST-BEST

Cleanest Inside and Out

Write for Booklet
and Prices NOW



MERCHANT & EVANS COMPANY
PHILADELPHIA

New York Chicago Brooklyn Kansas City
Baltimore Cleveland Denver



HAZARD



Unit Power Plant With Electric Starter

(North East Electric Starting and Lighting System)

New Features in Commercial Car Construction

Gear Reduction Integral with Unit Power Plant. Automatic Throttle Control. Permits Straight Line Shaft Drive to Live Rear Axle.

No Time Limit to Our Guarantee
Full Descriptive Catalog on Request

HAZARD MOTOR MFG. CO.
846 Coates Street ROCHESTER, N. Y.

SEAMLESS

MOTOR TRUCK GASOLINE TANKS

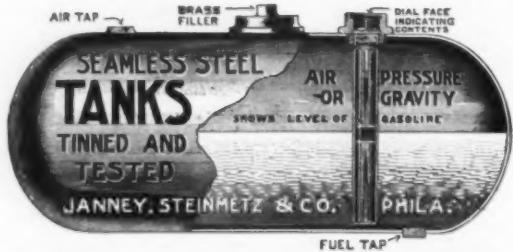
LEAKLESS

STRONG AND STURDY FOR ROUGH SERVICE
ALL SIZES IN STOCK

AIR PRESSURE RESERVOIRS FOR
SELF-STARTERS AND GARAGE TIRE FILLERS

New Catalog Now Ready—Write Us

COMPRESSED AIR MOTOR TRUCK STARTERS COMPLETE



THE KINSEY MANUFACTURING CO.

TOLEDO, OHIO

Manufacturers of Auto Parts—

Kinwood Radiators, Fenders
Kinwood Oilers, Gaskets
Kinwood Steel Frames, etc., etc.

SPECIAL METAL STAMPINGS

AUTOMOBILE TUBING

Seamless Brass and Copper Tubing

of all kinds,—any size, any gauge, any temper
From $\frac{1}{2}$ " down to the finest.

We are supplying many of the largest and best automobile concerns in the country with tubing. Why not let us quote you on your requirements? Our **QUALITY** is guaranteed,—our prices are low as quality will allow, and prompt deliveries are guaranteed. Could you possibly ask for more? **Correspondence solicited.**

ROME HOLLOW WIRE & TUBE COMPANY - **Rome, New York**

TRANSMISSION JACK SHAFTS
WHEEL BRAKES
BRAKE DRUMS
AND
SPROCKETS.

DIFFERENTIALS
AND
PLANETARY
TRANSMISSION
GEARS

HEAVY BUILT
SLIDING GEAR
TRANSMISSIONS
3 SPEEDS FORWARD.
ONE REVERSE
FOR 20 TO 60
HORSE POWER. FOR
TRUCKS CARRYING
1 TO 4 TONS

THIS IS OUTFIT NO. 358
SUITABLE FOR 1 TO 2 TON TRUCKS 20 TO 40 HORSE POWER
SAMPLE OUTFIT FOR \$140.00
WITH SLIDING GEAR TRANSMISSION
THREE-SPEED FORWARD ONE REVERSE
40 OR 60 HORSE POWER
SAMPLE OUTFIT FOR \$188.00

SEND 10 CTS. IN STAMPS FOR LARGE CATALOGUE

MUNCIE GEAR WORKS, MUNCIE, IND.

WHITE MOTOR TRUCKS

THERE are more than eight hundred owners who operate from one to fifty White trucks.

The supremacy of White trucks is the natural result of superiority.

The White Company
CLEVELAND
MANUFACTURERS OF
GASOLINE MOTOR CARS, TRUCKS AND TAXICABS

Why
Is the
Schwarz Wheel
used on all
the leading
Motor Trucks?

Schwarz Patent Spokes

Because it is the STRONGEST, SAFEST, and most ECONOMICAL, and will stand up where every other fails.

The special features of construction—the interlocking spokes—the tight immovable center assemblage—insure the wheel under the most severe strain. Spokes cannot work loose, and it will always run true.

You want the BEST for it is the CHEAPEST in the end. Write for information. Consult us on design and proportion.

THE SCHWARZ WHEEL COMPANY
FRANKFORD, PHILADELPHIA

THE STEEL SHOD ARIÈS MOTOR TRUCK

BUILT IN FRANCE

The only truck in the world
subsidized by the
FRENCH WAR DEPARTMENT
in both light and heavy weight classes.

The only MOTOR TRUCK in U. S. A.
running entirely on steel tires.

Investigate ARIÈS TRUCKS before
purchasing and be benefited by experience of others.

We carry a full line of extra parts.

J. JACCARD CO.
213 W. 69th. St. New York

Atterbury Trucks

DELIVER THE GOODS!
THE PERFECTLY BALANCED MACHINE!

Gasoline and Electric Delivery Cars
Motor Trucks Hotel Omnibuses

Write for catalog and details. We are pioneers and can supply any size or type for your purpose.



Atterbury Motor Car Co.

BUFFALO, N. Y.



Model "B" One Ton

\$800

DESIGNED
AND BUILT
EXPRESSLY

For COMMERCIAL USE



25 H. P., 4 cyl., 4 cycle,
Thermo-Syphon Motors—
3½" x 4¾"—Long Stroke.

The POSS MOTOR WAGON

"Built for THE PURPOSE"

This is the secret of the Power, Strength and Durability of the Engine and Chassis of the Poss Motor Wagon.

It is not a converted pleasure car. It has not a pleasure car engine. It has not a pleasure car transmission. It is a Power Wagon, with Power.

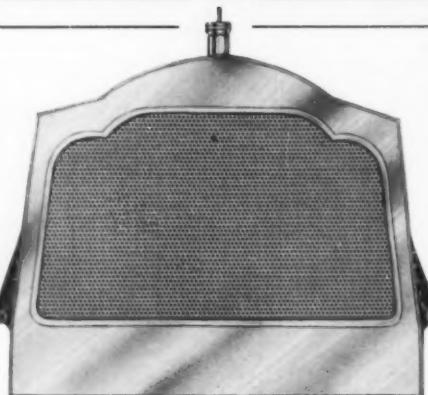
*Wide-Awake, Hustling Agents Wanted
Send for our Proposition To-day*

THE POSS MOTOR CO., 506 Howard Street, Detroit, Mich., U. S. A.

FEDDERS

Real Square Tube Radiators

Commercial cars require radiators that will stand many shocks and much hard usage. This was one of the weak parts of the commercial car but the test of time has proved that FEDDERS radiators render efficient service.



We want to figure with you your requirements for the coming season. If you haven't used Fedders radiators you probably have had a great deal of radiator trouble and you may think that their isn't a radiator built that will give you satisfaction. If this is the case we would like to have an opportunity of demonstrating that the Fedders radiator will stand the wear and tear and shocks of the commercial car and that manufacturers who equip their commercial cars with the Fedders have practically no radiator trouble. We can convince you. Will you give us the opportunity?

FEDDERS MFG. WORKS
BUFFALO NEW YORK

ONE LARGE USER WROTE—



"We carry these grips on our machines at all times and in a number of cases have found use for them. On any of these occasions we would have been seriously delayed if we had not had your grips, and we consider these grips have already paid for themselves."

A set on your car insures you against traction troubles. Catalogue on request.

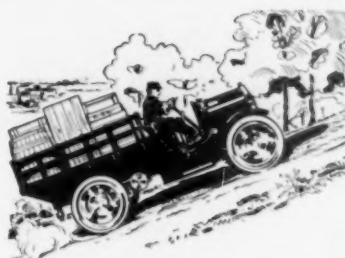
ATLAS CHAIN COMPANY,

BUSH TERMINAL No. 4
BROOKLYN, N. Y.



That it is lightest is the weightiest reason why you should own a Ford. Every added pound which an automobile carries above that which is needed for strength—means added expense and added danger. The Vanadium-built Ford is strongest for its weight.

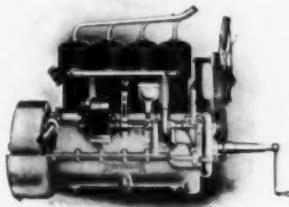
Seventy-five thousand new Fords go into service this season—proof of their unequalled merit. The price is \$590 for the roadster, \$690 for the five passenger car, and \$700 for the delivery car—complete with all equipment, f.o.b. Detroit. Latest catalogue from Ford Motor Company, Detroit, Mich.



All Roads Are Level

to the truck that places its reliance upon

THE RUTENBER MOTOR



This is the motor that is built for service, speed and silent performance. It cuts your motor costs in half and doubles your efficiency. Write for the record of this motor and for list of power trucks carrying the RUTENBER.

The Western Motor Co., Marion, Ind.

THE JONES RECORDER For DELIVERY ECONOMY

The Jones Recorder is one of the profit-making parts of the commercial truck. It gives complete daily record (in chart form) of trips, stops, duration of stops, duration of runs, etc., together with the speed. It enables you to check every movement of your delivery wagons or trucks. It gives you accurate cost of maintenance.

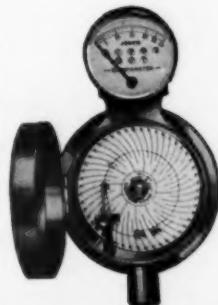
A VERY ECONOMICAL DEVICE FOR ALL TRUCKS

The Jones Recorder consists of a strong brass casing, containing a clockwork and flexible shaft from the drive wheel of the vehicle.

Ask for particulars

THE JONES RECORDER

Broadway and 76th St.
New York City



“Reliable Springs are
More important on
Commercial Cars than
on Pleasure Cars.”



THE PERFECTION SPRING CO.

Cleveland - - - - - Ohio

SPLITDORF
MAGNETO

"Always There"

SPLITDORF SERVICE goes arm in arm with SPLITDORF IGNITION—and has been a continuous SPLITDORF POLICY for more than two decades.

From the earliest days of coils and plugs and through every stage of ignition device, SPLITDORF has been synonymous with SERVICE.

If YOU DO NOT BENEFIT from this SERVICE the fault is your own. Our experts are at your call—our branches, which are miniature factories in equipment, are scattered throughout the country, and our inflexible rule is—"SATISFY THE CUSTOMER".

Come to us with your ignition troubles—we will gladly shoulder all responsibilities for changes and adjustments and guarantee the greatest satisfaction.

Write for catalog

SPLITDORF ELECTRICAL CO.
Walton Ave. and 138th St.
Branch, 1679 Broadway, NEW YORK
CHICAGO BOSTON LOS ANGELES
DETROIT KANSAS CITY SAN FRANCISCO

Motor
Lauth-Juergens
Trucks

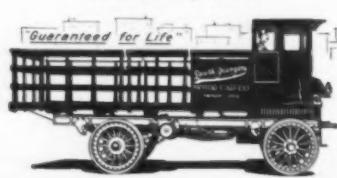
Are Guaranteed For Life
WHAT MORE CAN WE SAY?

Made in 1, 2, 3 and 5-Ton Sizes

Send for Catalogue

The Lauth-Juergens Motor Car Co.
FREMONT, OHIO

Guaranteed for Life



Grand Rapids Motor Truck Co.
MANUFACTURERS OF THE

"DECATUR" HOOSIER LIMITED 1½ TON TRUCK

Formerly made by the DECATUR MOTOR CAR COMPANY, DECATUR, INDIANA

Some choice territory still open. Address

GRAND RAPIDS MOTOR TRUCK CO.
North St., Grand Rapids, Mich.

Motor Truck Bands

MADE WITHIN THE FOLLOWING
Dimensional Tolerances

(ADOPTED BY THE SOCIETY OF AUTOMOBILE ENG.)

1.—Tolerance in circumference of felloe band:

	Plus	Minus
Before application to wheel	1-32"	1-32"
" " "	1-16"	1-32"

 Variation from precise measurement shall be uniform over entire width of band.

2.—Tolerance in width of felloe band:

	Plus	Minus
Up to and including 4"	1-32"	1-32"
4-1-16" to 6"	3-64"	3-64"
6-1-16" to 12"	1-16"	1-16"

3.—Variation in trueness of band when placed on surface plate: Band shall touch at all points within 1-32" up to and including 6" width. Over 6" width within 1-16".

4.—Variation in thickness of band: .006" plus or minus.

5.—Trueness to round. The radial tolerance on the wheel when felloe band is applied shall be 1-16" plus or minus. This plus or minus tolerance must not occur at diametrically opposite points. There shall be no flat spots or kinks in felloe band on the finished wheel.

The Standard Welding Company
CLEVELAND
NEW YORK CHICAGO DETROIT

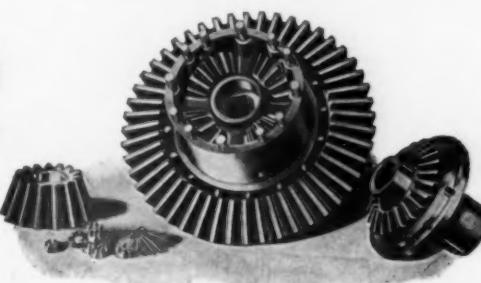
THE W. F. STEWART CO.
ESTABLISHED 1881 INCORPORATED 1898
FLINT, MICHIGAN

WE BUILD BODIES

for both pleasure and commercial vehicles, and can give you goods and service that can be depended on. The price, too, will be right. Get in touch with us.

The ROSS Differential Gear

For Commercial
Trucks



Made in three sizes—for trucks of from one to five tons capacity.

Write for Blue Prints

ROSS GEAR & TOOL CO. 959 Main Street, Lafayette, Ind.

BUCKEYE Motor Truck Jacks

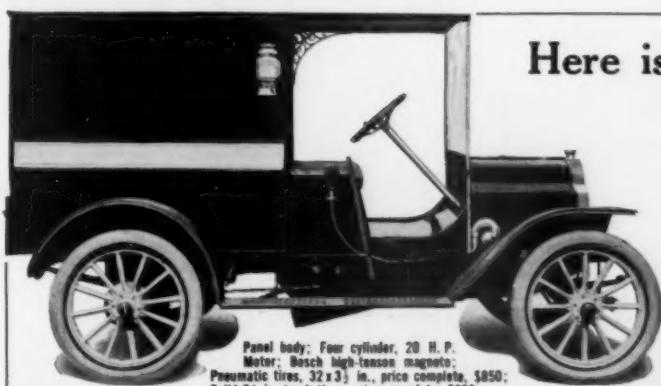
BUCKEYE Motor Truck Jacks are safe, reliable and made to stand the wear and tear for which they are intended. They are fully guaranteed, and cannot possibly drop with a load. They are made from Steel Drop Forgings, best finish and workmanship throughout.

Get our prices before you place your orders for jacks, we can save you money.

No.	Height Bar Down	Raise of Bar	Height Bar Up	Weight	Capacity	List Price
7	11 $\frac{1}{4}$ "	6 $\frac{1}{2}$ "	18"	16 lbs.	2 $\frac{1}{2}$ tons with formed handle	\$10.00
13	14 $\frac{1}{4}$ "	7 $\frac{1}{2}$ "	20 $\frac{1}{2}$ "	26 $\frac{1}{2}$ "	3 "	15.00
14	14 $\frac{1}{4}$ "	7 $\frac{1}{2}$ "	20 $\frac{1}{2}$ "	33 "	5 "	16.00
9	11 $\frac{1}{2}$ "	6"	17 $\frac{1}{2}$ "	10 "	1 $\frac{1}{2}$ "	6.00

Write today for descriptive catalog. Made only by

THE BUCKEYE JACK MFG. CO., Alliance, Ohio



Panel body; Four cylinder, 28 H.P.
Motor: Bosch high-tension magneto;
Pneumatic tires, 32 x 3 $\frac{1}{2}$ in., price complete, \$850;
Solid 2 $\frac{1}{2}$ in. truck tires, price complete, \$800.

Here is the 1912 Sensation of the
Motor World

COMMERCE
CAR

Dealers in all parts of the country are already reaping a harvest from sales of the Commerce Car.

We have some choice territory left for good, active dealers. Do not let this great opportunity pass you buy.

Write us for territory and dealer's proposition

The Commerce Motor Car Company
General Office, 633-639 Penobscot Bldg., Detroit, Mich.



DREADNAUGHT, Model A-6. Capacity, 6 Tons

A Pleasure Car

does not necessarily have to be a passenger carrying automobile. A commercial car that is built right and will run 365 days in the year if necessary is a pleasure car.

B - O - E *Best On Earth*

is a commercial car that is designed and constructed for strenuous service. It does work like a pleasure automobile but it isn't built along these lines. Its designers appreciated that a commercial car has to do real work day in and day out. Note that practically all the weight is carried between the axles and that the construction represents maximum strength.

Made in 2, 3, 5, 6, 7 and 10 Ton sizes

For further particulars, write

MOTOR CONVEYANCE COMPANY
Milwaukee, Wisconsin



In every respect our Mais internal gear drive is superior to chains. We guarantee these gears for one million miles.

What decides the *best* truck? The record of the Mais answers—the most mileage at the lowest cost per ton-mile. All other claims are but noise that is empty compared to the sound facts that give the Mais the verdict of *best*.

Not in the gears alone, but in every feature this nickel steel Mais is the best. It is the product of international experience—it is not a "warmed over" pleasure car.

We could build chain-driven trucks, but we won't. Chains are deficient and antique. Chains lose power, sag, get dirty, break, get out of alignment, and cannot be lubricated. The best European truck builders discarded chains long ago.

We use internal gears on the Mais. They *conserve power*, are enclosed in dust and grit-proof oil-tight construction, and never need replacement.

For Catalog and data on the Mais, write

Dealers' Dept. **THE MAIS MOTOR TRUCK CO.** Indianapolis, Ind.



"HARTFORD" CONE CLUTCH THE BEST

Furnished with Double Set of Universal Joints. Clutch can be removed from car as a unit without disturbing other parts. We furnish either Pressed Steel or Aluminum Cone. Weight same. Complete equipment 30 lbs. Made in two sizes, 25-30 and 35-40 H. P. Price is Right.

HARTFORD AUTO PARTS COMPANY
HARTFORD, CONN.

The J. S. Bretz Co., New York, Detroit, Sole Selling Agents



Adams Trucks "Deliver the Goods"

AGENTS ATTENTION

Thousands of wide-awake business men are considering the change from horse-drawn vehicles to motor trucks. They are only waiting to be shown.

With the Adams Truck You Can Show Them

Its manifest simplicity, sturdiness, accessibility and handsome appearance win their favor at once. A demonstration clinches the order. They sell, stay sold and sell others.

Write us for agency details.

THE ADAMS BROS. CO.
FINDLAY, OHIO

To Dealers It Pays to Sell Lippard - Stewart Delivery Cars

Because:

1. Lippard-Stewart cars know no "seasons." They are always needed, always ready for use, and sell just as readily in winter as in summer.
2. They are never "a last year's design." Trades are not asked for, as is often the case in selling pleasure cars.
3. Fancy showrooms unnecessary to sell Lippard-Stewart delivery cars. Service and utility looked for as a good business investment.
4. It is easy to show merchants how Lippard-Stewart delivery cars will pay for themselves out of the savings they effect over horse delivery. Plenty of definite proof to show the man who is looking for means of saving money and increasing business.
5. No trouble to locate prospects for Lippard-Stewart cars. Every merchant with a delivery problem is a prospective buyer.
6. You may sell several cars at once by the same effort that would sell one pleasure car. Satisfactory service of one economical commercial vehicle makes repeat orders easy.
7. Lippard-Stewart cars are the first light delivery cars to embody all the latest and best features, such as:

Four cylinder, 22 h. p. motor, simple and compact. Special spring suspension, making car easy riding at all times.

Modern mechanical features. Every part easy to get at.

Handsome, graceful appearance combined with sturdiness and real service.

Let us show you these splendid cars which open up a scarcely touched field of big possibilities for you.

**Lippard-Stewart Motor Car Company
Buffalo, N. Y.**

HAYES HEAVY TRUCK AND PLEASURE CAR WHEELS

Strongest, Most Economical and Safest Wheels Obtainable.

After years of experimenting with all sorts of wheels, the most prominent pleasure and commercial car manufacturers in the Automobile industry now specify HAYES WHEELS on their models. They have found that these wheels meet every requirement necessary in perfect wheel construction and that it is impossible to obtain a better wheel than a HAYES at any price.

A wheel that is the undivided choice of the majority of important manufacturers is worthy of your consideration.

A trial will convince you that our statements are true.

You cannot afford to use a wheel you know nothing about—the experience will prove disastrous as well as expensive.

We have been making wheels for 25 years and if you appreciate quality and a reputation for square dealing, we solicit your wheel business.

Our facilities are unequalled, enabling us to meet every requirement with little delay.

No order too small. None too large.

All orders receive our very best expert attention.

May we be favored with your wheel business for 1912?

Consult us on your design. Our Engineering force is at your disposal.

Estimates and details gladly furnished on request.

**HAYES WHEEL COMPANY
JACKSON, MICHIGAN**

More Power and Speed with Less Gasoline

The M. & M. Economizer

Is Made for Getting More Power and Speed with Less Gasoline

The M. & M. is for

Cooling your Engine
Lubricating the Cylinders
Saving about 40 to 50% of Gasoline
Saving the Brakes
Prolonging the Life of the Batteries

Making Crowded Streets and Rough Roads Easy

Giving you Control over your Car
Safety Valve in case of Back-firing
Saving the Electric Current
Making Hill Climbing Easy

The M. & M. is made with two valves, one for speeding and power with less gasoline, and one valve for coasting.

The M. & M. Economizer goes on the intake pipe and operated by foot pedal, uses no gasoline whatever going down grades. What the coaster brake is to a bicycle the M. & M. is to the automobile.

No automobile is complete without it. By the use of the M. & M. Economizer accidents can be avoided, and your car under absolute control at all times. Simple to attach. Any garage or machine shop can install it on short notice. Act at once. Remember, while you are thinking about giving us you order for one of these M. & M. Economizers, you are losing money by thinking. Don't think—give us your order at once.

Used with highly satisfactory results
by Commercial Car Manufacturers

Patented in
United States
and Europe

Price
Complete
\$3.50

Agents
Wanted

Money refunded if
the M. & M. will
not do all we claim

Moller Brothers Controller & Economizer Co.
700 Betz Building Philadelphia, Pa.

WHAT'S IT WORTH
TO YOU TO HAVE
THE UNINTERRUPTED SERVICE OF
YOUR TRUCK?

Whatever the amount
may be represents one of
your savings in using

Diagonal Block Tires



Showing Block Removed

When your truck is equipped with Diagonal blocks you are absolutely independent of service stations and tire companies because the simplicity of the fastening of the blocks enables your truck driver to take care of any replacements that may be necessary at any time and at any place, without even jacking up the wheel. Only tool necessary is a wrench. A new block makes a new tire.

The independent block feature eliminates heat and allows for rubber displacement, thus insuring increased mileage.

Diagonal Blocks grip the road with the same sure pull as the cleats on a traction engine. Result—greater traction.

Write for booklet. Agents wanted everywhere.

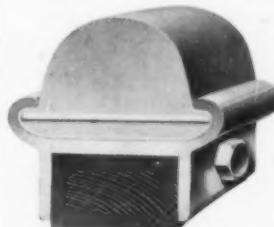
The Diagonal Block Tire Co.
URBANA, OHIO

1
OR
1000

IF IT IS PRESSED STEEL
FRAMES

WE CAN FILL
YOUR REQUIREMENTS

A. O. SMITH COMPANY
MILWAUKEE



**BEST
FOR FIRE
APPARATUS**

Fire apparatus equipped with Republic Motor Truck Tires is in service all the time. There are no long delays when making renewals.

A new tire can be put on anywhere. Just remove the outer flange, slip off the old tire, put on the new tire, bolt up the flanges and you are ready for the next run.

The Republic Tire cannot be pulled off the rim or forced loose during service, making it more efficient than other tires.

**REPUBLIC MOTOR
TRUCK TIRES**

Have no steel bands or parts to return to the Company for credit, thereby eliminating express charges and loss of time in shipping.

Let us figure on your requirements

THE REPUBLIC RUBBER CO., Youngstown, Ohio

Dealers and Agencies in the Principal Cities

Having Trouble With Brakes?

Let us solve your brake problems.
First get a set of—



This is ONE brake for you to use. It has no equal. Simple in design. Excellent in construction. The best possible material.

DUPLEX acts instantly. Either forward or backward. Never fails. Gives safety, security, satisfaction.

We make special brakes—brakes to order. Send us your requirements.

Let Us Quote Prices

We also make Raybestos Friction Facing,
Raymond Brakes and Gyrex Mixer :: ::

THE ROYAL EQUIPMENT COMPANY
484 HOUSATONIC AVE. BRIDGEPORT, CONN.



**Magneto
Bargains**

\$30.00 for a **\$105.00** 6 cylinder
\$20.00 for a **\$93.00** 4 cylinder
\$18.00 for a **\$65.00** 2 cylinder
\$16.00 for a **\$60.00** 1 cylinder

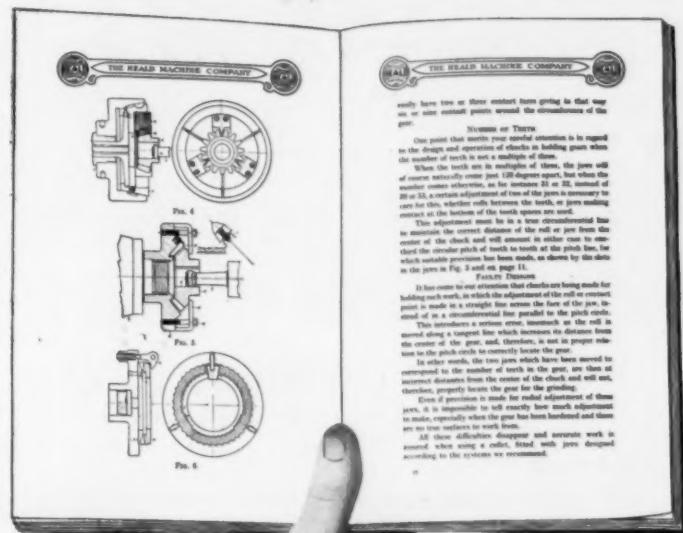
Imported U. & H. High-Tension
Magnetos Less than Import Cost

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J. S. BRETZ COMPANY

250 W. 54th Street
NEW YORK

THIS BOOK IS FREE



*Just Look At
Its Title*

"Practical Hints on Internal Grinding"

IT IS FULL of the solutions of just such problems as those indicated on the left-hand page. Its reading matter is both interesting and valuable—examine the right-hand page and you will see how and why. We're getting requests for it every day from Managers, Superintendents, Foremen and Machinists. And the unanimous opinion is—"Just what I've been looking for." Copies sent free on request.

The Heald Machine Co.
12 New Bond Street, WORCESTER, MASS.

Truck Economy is Dependent Upon Knowledge of Truck Mileage

Veeder

Hub Odometer

\$25

At Your Dealer's or
Direct from Factory



You, as a commercial car user, must look upon the money paid for trucks as just as much of an investment as money paid out for supplies, additions, stocks, etc., and you should insist on a proper return from this investment as well as upon the others.

To make your truck investment pay it is **absolutely essential** that accurate records be kept of the distance the truck travels. By such records, and only by these records, can you check your tire guarantee, your drivers' capabilities, gasoline and oil consumption per mile, cost per ton for each mile, etc., etc.

The VEEDER HUB ODOMETER will do this necessary work for you. It registers backwards as well as forward. It is sealed, so cannot be tampered with or altered. It simply takes the place of the regular hub cap and **can be attached by any mechanic.**

No Intricate Wiring, No Cables No Magnets, No Tubes

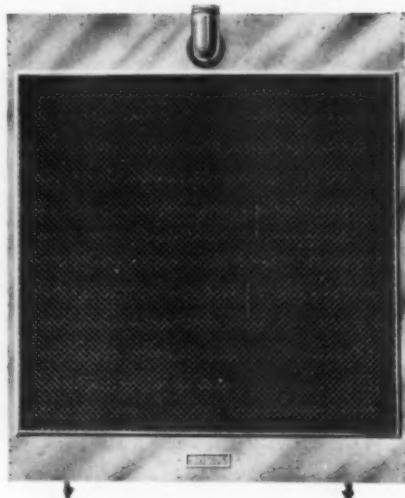
All we need to know is make, model, size of wheel and year of manufacture of your truck. We ship the HUB ODOMETER to you and you do the rest. Being made by the Veeder Manufacturing Company, whose recording instruments are world-famous in all lines of business, is a sufficient guarantee that the VEEDER HUB ODOMETER is simple, accurate and durable.

Send for Catalogue D, descriptive of HUB ODOMETER.

The Veeder Manufacturing Co., Hartford, Conn.

Makers of Cyclometers, Odometers, Tachometers, Tachometers, Counters and Small Die Castings.

Briscoe Truck Radiators

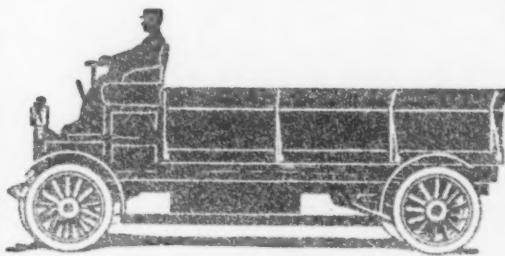


Detroit Honeycomb Type

The Detroit Honeycomb Radiator is the strongest and most efficient Truck Radiator made. It is built on scientific principles, has a free water circulation and in case of accident is easily repaired. It is used exclusively on Grabowsky, Rapid, Reliance and other Motor Trucks.

Write us for Descriptive Catalogue

Briscoe Manufacturing Co.
Detroit, Mich. Newark, N. J.



Going to Build Electric Trucks?

MANUFACTURERS of gasoline trucks who are considering building electric trucks should call upon the service of the Westinghouse electric vehicle engineers.

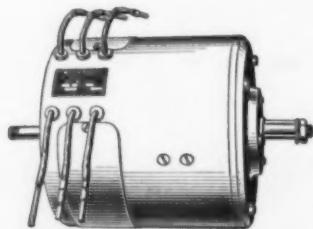
The recognized success of Westinghouse vehicle equipment is due to the use of apparatus of proven reliability, and its proper application.

The equipping of a truck with the proper motor, controller, and battery is a problem in transportation engineering. The long successful experience of the Westinghouse Company in this field enables it to solve such problems in the most satisfactory way for its customers.

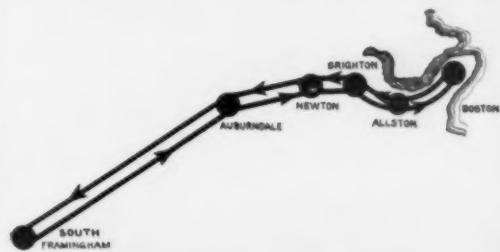
Ask the Westinghouse engineers to consider your problem. Write Department 19 today.

Westinghouse Electric & Mfg. Company
East Pittsburgh, Pa.

Sales Offices in 45 American Cities



WESTINGHOUSE
the **MOTOR** you
never have to think about



Good Battery Performance on Delivery Wagons

A large Boston furniture house has a $1\frac{1}{2}$ ton delivery wagon equipped with a Gould Storage Battery. Recently this wagon left their warehouse at 8.30 A. M., with a 1600 lb. load, made deliveries at Brockton, Allston, Brighton, Newton, Auburndale and South Framingham, and returned after the 71 mile trip at 8 P. M. 14 stops were made leaving the net running time 10 hours. The country covered, as you know, is very hilly, and muddy roads were experienced because of rain.

If a salesman sings to you the siren song about new-fangled, high-priced, "guaranteed" batteries that promise results but have no service records, **do your own thinking**. Don't pay for several batteries at once, and then partially pay for more at renewal time when the guarantee hasn't made good. That is worse than the holeproof sock game, where you pay for a dozen pairs, take six along and come back later for the rest. Gould batteries sell at the price of **one battery each**, and no strings are tied to the customers on renewals.

Customers who are experienced in battery service invariably come back to us voluntarily when they have tried out one Gould Battery, for they want more of the same kind of service.

Write for literature today

Gould Storage Battery Co.

General Offices: 341 Fifth Ave., New York

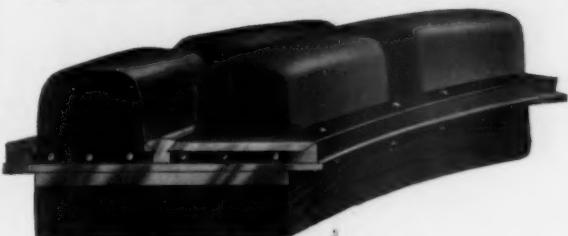
Boston: 89 State Street. San Francisco: 904 Rialto Bldg.
Chicago: The Rookery. Cleveland: American Trust Bldg.

WORKS: Depew, N. Y.

Agents in Washington, D. C.; Kansas City, Mo.; Denver, Col.; Detroit, Mich.; Topeka, Kan.; Los Angeles, Cal.; Seattle, Wash. Full stock carried in all cities where we have offices or agents.

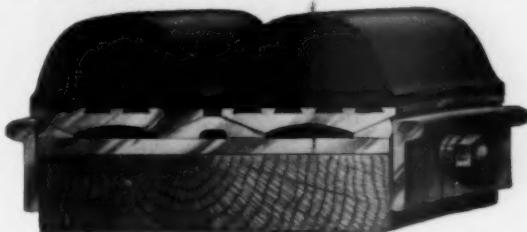
Owners of Motor Trucks— See What **GOOD YEAR** 1912 Tires Save You!

GOOD YEAR
Akron, Ohio



Goodyear Individual Block Tire

If you have a heavy truck that requires exceptional traction and non-skid tires, why don't you put Goodyear Individual Block Tires on the rear (single demountables on front)? Then you'll have no extra tire equipment to carry, except a few blocks. And when you want to replace a block, you won't have to remove a dozen or so. Each block goes on and off individually—quick!



Goodyear Demountable Solid Tire

If you want easy tires to put on and take off your heavy truck, see what we give you in the Goodyear Demountable Tire. There's no tire in the world more quickly and easily replaced—and we guarantee this tire specifically for 10,000 miles.

If you've a light, high-speed commercial car, how better can you protect it than by equipping it with Goodyear-Motz Truck Tires?

Yet these are but three of the 1912 types of Goodyear Truck Tires. They are all shown in large photographic illustrations and detailed description, in our handsome new 12-page (12x18) Motor Truck Tire Circular. May we send you a copy and thus help you to solve your truck tire problems?



Goodyear-Motz Motor Truck Tire

Surely you won't invest in truck tires until you have investigated the best tires that the Goodyear engineers can build, after thirteen years' wide experience.

Write today and you will hear from us by return mail. Please give model and make of your car.

The Goodyear Tire & Rubber Co., Akron, Ohio

Branches and Agencies in 103 Principal Cities (623)

More Service Stations Than Any Other Tire

We Make All Kinds of Rubber Tires, Tire Accessories and Repair Outfits
Main Canadian Office, Toronto, Ont. Canadian Factory, Bowmarille, Ont.

A Tire for Every Service

VANADIUM

The Steel of Ultimate Quality

ELASTICITY

STRENGTH

TOUGHNESS

ENDURANCE



Cut from Vanadium Steel Crankshaft twisted cold
Elastic Limit 116,000 lbs.

Vanadium is the only element that greatly increases the elastic limit and dynamic strength of steel without impairing its ductility

Booklets and expert advice on application

American Vanadium Company

Largest Manufacturers of Vanadium Alloys in the World
Immediate shipment, any quantity

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LONDON PITTSBURGH



CULLMAN SPROCKETS and
Differentials

in stock and to
order.

Send for catalog
and let us quote
you on your re-
quirements.



CULLMAN WHEEL COMPANY, CHICAGO
1351 GREENWOOD TERRACE



The First Electric Truck at a Popular Price *"Standard in Every Detail"*

THE solution of your delivery problems and expenses. A car of simplicity, few moving parts, and a minimum up-keep cost. Built with materials of finest quality made by the best-known manufacturers. Your delivery problems warrant your investigating the M & P Commercial Car.

Chassis, including driver's seat	- - -	\$1450	F. O. B. Cars
Open express body	- - -	\$1500	Detroit
Closed body	- - -	\$1600	

Body blue prints, specifications and catalogue upon request.

M & P ELECTRIC VEHICLE CO.
FRANKLIN AND DUBOIS STREETS, DETROIT

Detroit Oilers Prevent Waste

The Detroit Mechanical Force Feed Oiler gives **sure** lubrication under every condition.

In connection with splash systems the Detroit maintains **exactly** the correct level at all times. At every changing speed the right amount of fresh, clean oil is supplied as fast as the oil is used up.

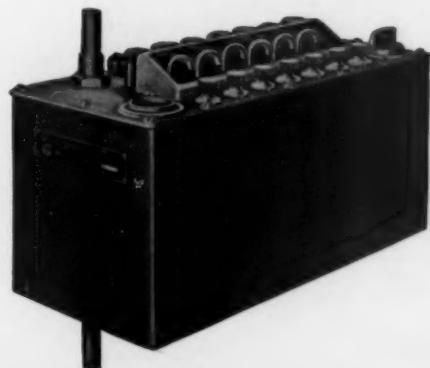
With the oil level in the crank case maintained at the proper height, there is no opportunity for either under-lubrication or over-lubrication.

By preventing over-lubrication the Detroit Mechanical Force Feed Oiler eliminates **waste** of oil and its results—carbonized cylinders, pitted valves, fouled plugs and smoke at the exhaust.

Once properly regulated the Detroit Oiler takes care of itself and needs only an occasional replenishment of the oil supply in the reservoir.

The Detroit Force Feed Oiler gives a **complete** lubricating system for **every** kind of gas engine. It is efficient, economical and sure.

The Detroit Force Feed Oiler Has No Checks



The Detroit has no ball checks or check valves, springs or other complicated mechanism to get out of order and clog up. It guards against the damage, waste and expense resulting from faulty lubrication. It makes for GUARANTEED SERVICE.

Detroit Force Feed Oilers are made in capacities from two pints to five gallons, with from one to thirty feeds—pulley, ratchet, sprocket or gear drive.

They are furnished as standard equipment by many manufacturers of high-grade commercial trucks.

The Detroit catalog tells all about the advantages in design and construction which have made the "Detroit" the standard gas engine lubricator.

Write today for catalog P-68 and full information, stating in what kind of truck you are interested.

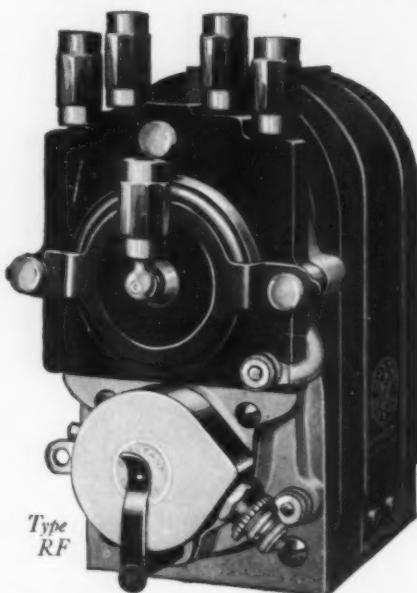
DETROIT LUBRICATOR COMPANY.

DETROIT, U. S. A.

Largest manufacturers of lubricating devices in the world.



Trucks and Tractors Demand



a very intense spark that will fire, under all conditions, large slow speed motors. Actual service proves the only ignition that will produce that never-failing, white-hot spark is the

Remy Heavy Duty Magneto

(Type RF)

This type is built especially for use with heavy duty motors, and possesses the sturdy strength and simplicity that characterizes all Remy Equipment.

So extraordinary is the efficiency of the Type RF Magneto that many of the largest truck and tractor manufacturers in the country use this Remy Magneto as their standard equipment. Their product calls for only the highest quality ignition, and experience has shown that the Remy is unequalled.

Remy Service

places at your disposal a network of Service Stations with experts always ready to keep your trucks free from ignition troubles.

Remy Electric Company

FACTORIES-ANDERSON, INDIANA-GENL.OFFICES



NEW YORK
BOSTON

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CHICAGO
KANSAS CITY

SAN FRANCISCO
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The Real Test of Truck Tires

The Real Test of Truck Tires

is not service on smooth, well kept main thoroughfares—the real test is service around warehouses, depots, terminals and wharves where pavements are always at their worst.

Diamond Wire Mesh Base (Spliceless) Truck Tires are built to *give Mileage and Service under all conditions.*

A rugged tire that absorbs and distributes the terrific shocks of the impact of a heavily loaded truck on the roughest pavements—and the only solid tire that does so.

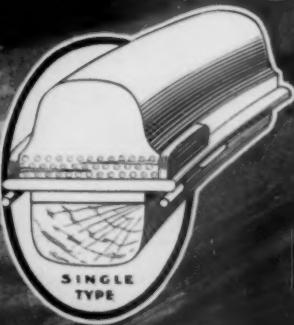
A one-piece (Spliceless) tire, correct in design, and the largest selling solid rubber motor truck tire in America—that's the Diamond Wire Mesh Base Truck Tire.

Write for our book "The Profit Side of a Motor Truck."

The Diamond Rubber Company

AKRON, OHIO

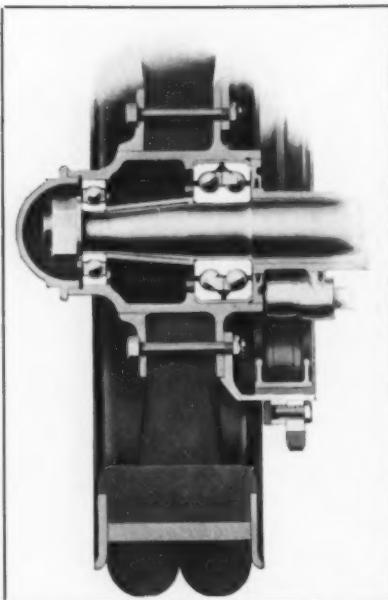
Diamond
WIRE MESH BASE
TRUCK TIRES



American
Made
for
American
Trade

NEW DEPARTURE GUARANTEED BALL BEARINGS

Guaranteed
for
Commercial
Truck
Work



In the application shown on this page, the double row is mounted within the spoke or load center of the wheels on a truck axle in such a way as to carry radial and all direction thrust and to take the major portion of the load. The outer single row bearing is floated to carry radial loads only and to steady the wheel.

The bearing equipment of the modern motor vehicle of any type or load rating is vital to the efficiency of the car.

New Departure ball bearings are preferred to any other type because of the following qualities:—

The double row type has two rows of balls, thereby increasing the load carrying capacity and providing ample safety margins for the inevitable overloading of the trucks.

The double row bearing is equally efficient for thrust or radial loads. This bearing carries maximum stresses from any direction simultaneously and without friction or cramping of the balls.

The double row embodies a safe ball bearing unit in which the adjustment and alignment are absolutely maintained under all conditions.

The double row ball bearing economizes space, materials, time and labor of mounting and cost.

This bearing is, therefore, superior for heavy duty required in motor trucks because of its excessive strength, double service, double efficiency and guaranteed durability.

We maintain an engineering service department in which highly specialized consideration of your bearing problems is at your command. Write us today.

The New Departure Mfg. Co., Bristol, Conn.

Western Branch, 1016-17 Ford Bldg., Detroit

HYATT ROLLER BEARINGS



By reason of the flexibility of HYATT ROLLER BEARINGS they will give under shock. This accomplishes two purposes. First,—it prevents the troubles with broken bearings so common where ball bearings are used. Second,—it overcomes the noise produced by rigid bearings which is so annoying to automobilists.

The absence of delicate adjustments renders HYATT ROLLER BEARINGS immune from troubles occasioned by carelessness, curiosity or ignorance. You can be sure that when your car is equipped with HYATT ROLLER BEARINGS, they will be the last part of the car to wear out. They have a clear record.

Perfect Lubrication is essential to the long life of your bearings. HYATT ROLLER BEARINGS have a system that is exclusive. The rollers are hollow. The spirals in the rollers alternate from right to left. This gives an even distribution of lubricant in all directions over the surface of the rollers.

There are many features about HYATT ROLLER BEARINGS that will interest you if you are not already using them. Most of the American Automobile Manufacturers are. Why not you? We will be glad to go over your plans with you.

HYATT ROLLER BEARING CO.
D E T R O I T , M I C H I G A N

SHELDON

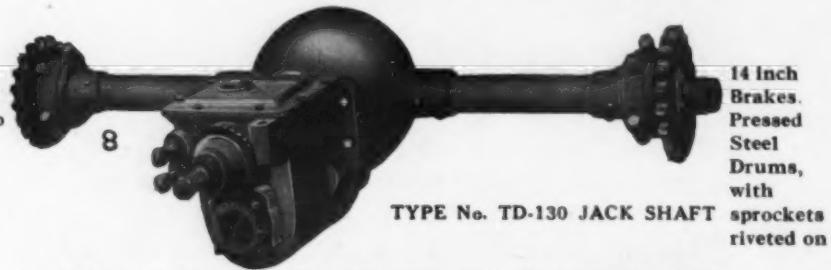
ONE TON EQUIPMENT

It's Ready For You

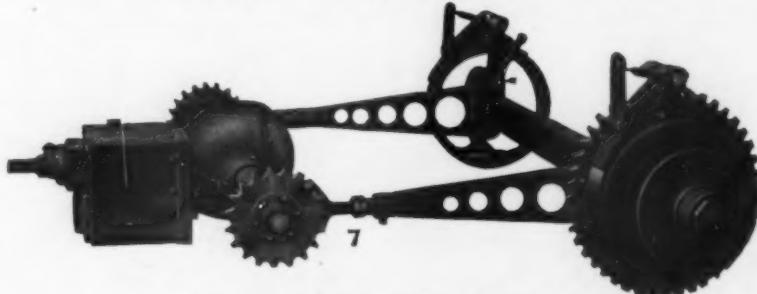


When we say this equipment is ready, we mean it has been thoroughly tried out, and that we are in a position to accept orders for prompt shipment.

Radius
Rods
Designed to
take care
of all
operating
conditions



A VERY COMPACT SUBSTANTIAL PROPOSITION



BRAKES AND RADIUS ROD EQUIPMENT D-132

Our One Ton Front Axle is I-Beam style with spring pads forged integral. Rear Axle also has integral spring pads.

We furnish a standard set of springs to go with this One Ton Equipment.

Order Axles, Jack Shaft, Transmission, Brakes, Radius Rods and Springs all from one source—one shipment.

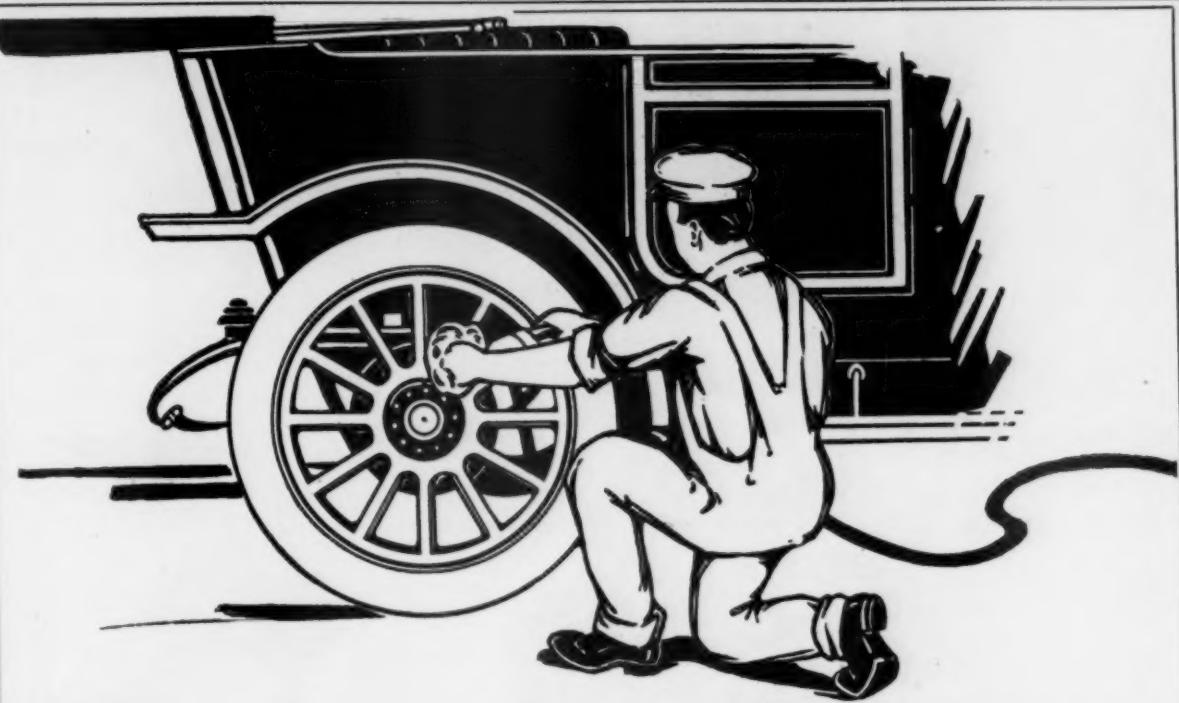
Our Bulletins Give Facts Worth Getting

SHELDON AXLE COMPANY
WILKES-BARRE, PA.

Branch Office
68 East 12th Street
CHICAGO

Branch Office
1215 Woodward Avenue
DETROIT





The Soap-Proof Varnish

Your car is to-day, *every day*, receiving a rough and ready bath of soapy water, made doubly effective by the good stout stream of a hose.

Yes, this takes off the caked mud, glued on by the road oil.

But it also kills the varnish.

There is such a varnish, and only one. We have perfected

Look at the hood, fenders and wheels of your car if you doubt it.

You say you would be happy if there were a finish which would stay on your car, and keep its fresh, new appearance indefinitely, not affected by soapy water, road oil, mud and the sand blast of the road.

after three years of experiments and service tests. No matter what other varnish it is compared with, the results are always the same. It lasts from five to ten times as long in the laboratory or on the car in use.

Here is a proof:

If Vanadium Chassis Finishing is put into a strong soap solution it stays bright and hard for hours. All other varnishes under this treatment are rapidly reduced to the consistency of cheese and absolutely lose their lustre. **Our own old line varnishes are no exception.** This test is equivalent to a daily washdown in the garage for an entire season.

Have the hoods, fenders and underparts of your car revarnished with Vanadium Chassis Finishing. They will look new and they will stay that way.

Tell your painter you want this material used, or you yourself send to us for two quarts of Vanadium Chassis Finishing, sufficient for a large car. Price, \$1.25 a quart.

The best varnish for the body is Valentine's Vanadium Body Varnish. Together these two varnishes give the best possible finish.

Mail coupon for booklet: "How to Have a New Car All the Time."

(CCVC)

Valentine & Company

456 Fourth Ave., New York

343 S. Dearborn St., Chicago

74 Pearl St., Boston

TRADE VALENTIN
VARNISHES MARK.

Name.....
Address.....
City.....
State.....
Sign and Mail to
Valentine & Company,
New York
City



WESTONMOTT^{CO}

The Sign of Surety

Axles Hubs Rims

FOR NEARLY THIRTY YEARS
our plant has been in the forefront.

FIVE MAMMOTH FACTORIES
in Flint, Mich., are something of a
criterion as to our immense output.

AN ENGINEERING ORGANI-
zation of experts that has not an
equal in the country gives our
products the stamp of perfection.

BETTER GET IN TOUCH WITH
us immediately; we know how.

SEND FOR CATALOGUE "B."

R. S. V. P.

WESTONMOTT^{CO}

FLINT, MICH.



MACK



COMMER



SAURER



GARFORD

10,000 MILES CONTINUOUS SERVICE



ALCO



SAURER

POLACK TYRES give a greater continuous mileage than any other truck tyre manufactured.

POLACK TYRES have the maximum resiliency and will reduce your expense for mechanical repairs.



PACKARD



GENERAL VEHICLE

POLACK TYRE & RUBBER COMPANY

Main Offices:
Ehret Bldg., Broadway and 59th St.
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930 South Main St., Los Angeles, Cal.



GRAMM



PIERCE-ARROW



COMMER

Use them on your Gasoline Truck and keep it on the road earning money instead of in the repair shop losing money.



Two New Delivery Cars

Model 59

These delivery models carry bodies of ample dimensions. Each is handsomely finished and has a carrying capacity of 800 pounds. The "Special" is accessible by two large doors at rear, extending full height.

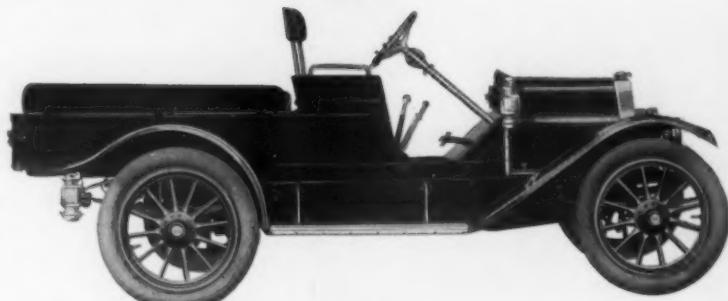


MODEL 59 DELIVERY
"SPECIAL." PRICE, \$1000

BODY SPECIFICATIONS

Length of floor - - - - 60"
Width of floor - - - - 43"
Height from floor to top - 53"
Tires - - - - 33" x 4"
Color: Maroon with black trimmings.

MODEL 59 DELIVERY
"EXPRESS." PRICE, \$950



BODY SPECIFICATIONS

Length of floor - - - - 67"
Width of floor - - - - 42"
Height of side - - - - 10"
Width of side wings - - 6"
Tires - - - - 33" x 4"
Color: Overland blue with gold trimmings.

Specifications of Chassis

Wheel Base—106 inches.
Tread—56 inches.
Motor—4 x 4½.
Horse-Power—30.
Transmission—Selective, three speeds and reverse.
Clutch—Cone.
Ignition—Dual, Splitdorf magneto and batteries.
Brakes—On rear wheels, 2 inches wide, 10-inch drums, internal expanding, external contracting.
Springs—1½ inches wide, semi-elliptic front, three-quarter elliptic rear.
Steering Gear—Worm and worm gear adjustable, 16-in. wheel.
Front Axle—Drop forged I-section.
Rear Axle—Semi-floating.
Wheels—Artillery wood, 12 1½-inch spokes, 12 bolts each wheel.
Frame—Pressed steel.
Finish—Overland blue.
Equipment—Three oil lamps, two gas lamps and generator.
Tools—Complete set.

Write for a catalogue. Please ask for Book N46

The Willys-Overland Co.

Toledo, Ohio

First in the field — first in quality — first in the favor of users.

J. L. G. & Bro. 6/12

GIBNEY Wireless

The Three-Years-Ahead Tire

WE are not surprised that practically all the manufacturers are now advocating the GIBNEY type of tire.

It is proof that although we were the pioneers, we were right in the beginning, and it is a guarantee to the buyer of solid tires that he will get the maximum of advanced ideas, the best quality and most experience, if he buys

GIBNEY TIRES

Are you interested in knowing what users of GIBNEY TIRES have to say about GIBNEY TIRES? The following letter is unsolicited:

Extract from letter dated Nov. 23, 1911:

"... We are pleased to state that the Gibney Tires which have been furnished to us by you have given entire satisfaction and are running now from 14 to 18 months."

"We have had as high as two years service out of the Gibney Tires."

(Signed)

F. A. POTTH & SONS,
Philadelphia.

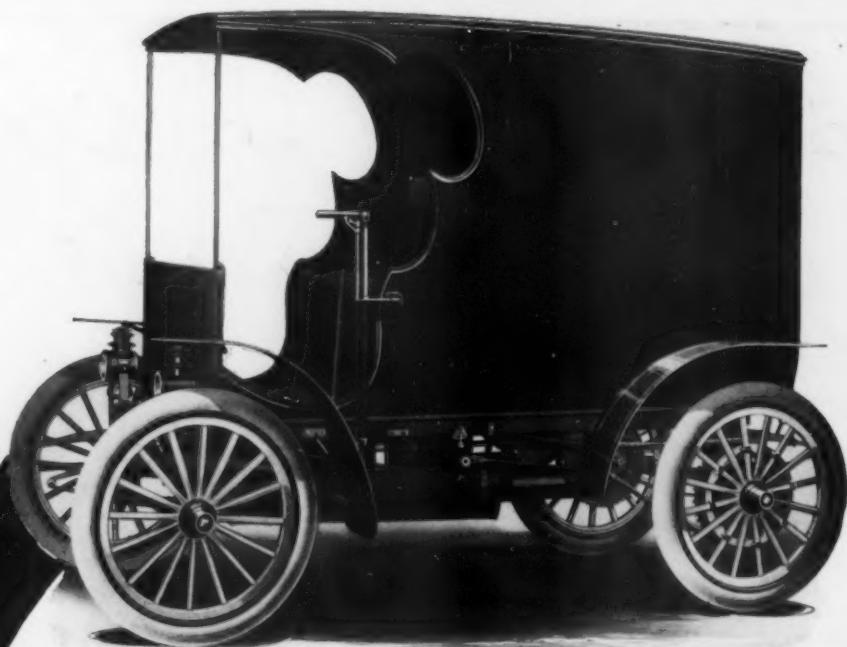
THOSE buyers who have been using Gibney Tires during the past three years are pleased to know that their foresight was based on recognition of merit. Although the Gibney type of tire is three years ahead of the times, it is right in construction and material, which therefore is a vindication of the good judgment of those buyers who recognized its superiority before this type became adopted almost universally by other tire makers. It pays to deal with leaders, and for that reason it will pay you to buy Gibney Tires. You will get the maximum of service, because you get the benefit of the best there is in the tire world.

JAMES L. GIBNEY & BRO.

213 N. Broad Street, Philadelphia

248-52 W. 54th Street, New York

LINCOLN



LINCOLN

NO TIME LIMIT ON THE GUARANTEE

WE CLAIM

That the Lincoln Motor Wagon excels any other light wagon of equal capacity, and

INVITE COMPARISON

With any other wagon selling for even \$100.00 more, and

CHALLENGE

The production of equal construction, workmanship, material, durability and design, at the same price.

DEALERS

Some of the best and largest dealers in the country have endorsed the Lincoln by contract. We want a few more good agents. Write for terms.

LINCOLN MOTOR CAR WORKS

1349 W. Harrison St., Chicago, Ill.

Better Service—Less Cost

The "Exide" Batteries

For Commercial Electric Vehicles

The cost of maintaining and operating "Electrics" depends to a great degree upon the battery you use.

There are four different types of "Exide" vehicle batteries. Each type of battery has been designed for a special service.

"Exide"

"Hycap=Exide"

"Thin=Exide"

"Ironclad=Exide"

The "Exide" batteries will give you more miles at less expense, with less attention and with greater continuity of service than any other batteries made. They never "stall" on hills nor in starting heavy loads. They give good service in either hot or cold weather. They require little attention to be kept in perfect order.

A striking proof of the superiority of the "Exide" batteries is the fact that they are used and endorsed by the following 23 prominent Electric Vehicle makers. No other battery carries such an endorsement.

Argo Electric Vehicle Co.

Atlantic Vehicle Co.

Baker Motor Vehicle Co.

Borland-Grannis Co.

Broc Electric Vehicle Co.

Columbus Buggy Co.

Champion Wagon Co.

Commercial Truck Co. of America

Dayton Electric Car Co.

General Vehicle Co.

Grinnell Electric Car Co.

R. C. H. Corporation

Kentucky Wagon Mfg. Co.

C. P. Kimball & Co.

Ohio Electric Car Co.

Phipps Electric Auto Co.

Rauch & Lang Carriage Co.

Standard Electric Car Co.

Studebaker Automobile Co.

The Waverley Co.

Walker Vehicle Co.

Ward Motor Vehicle Co.

Woods Motor Vehicle Co.

This company maintains an "Exide" Service Organization which is unequalled. It has Sales Offices in 14 cities, "Exide" Depots in 8 cities, Inspection Departments in 5 cities, "Exide" Inspectors in 14 cities and there are 863 "Exide" Distributors. No matter where you are located you can always secure prompt and reliable service if you use the "Exide" batteries.

Write our nearest office for any battery help or information you wish. Let us tell you the type of "Exide" battery which is best adapted to your particular service. Get our publications on vehicle batteries. We want to be of service to you.

THE ELECTRIC STORAGE BATTERY CO.

1888

PHILADELPHIA, PA.

1912

NEW YORK BOSTON
SAN FRANCISCO

CHICAGO TORONTO

ST. LOUIS CLEVELAND
PORTLAND, ORE.

ATLANTA SEATTLE DENVER DETROIT
LOS ANGELES

YOU bought trucks because of their economy—Why not increase their economy still more by using a

Bowser Gasolene System
With Enclosed Pump?

Save yourself the back straining, wasteful and dangerous task of carrying gasoline to the truck or the trouble of getting the truck in and out of the garage.

No Waste—Danger or loss from any source

Keeps absolute record of gasoline used by each truck.

The Bowser Enclosed Pump is connected to a galvanized steel underground tank. It can be located at any convenient place outside or inside the garage. Enclosed in a heavy cast iron cabinet



with double swing doors that lock, thoroughly protecting it from meddling and the weather.

Its substantial construction makes it equally valuable for indoor installation.

The Pump includes the latest centrifugal filter—ten thousand gallon meter which records all the gasoline drawn—a length of special gasoline hose terminating in a portable nozzle strainer.

Investigate this **Bowser System** today. Ask us for details. Send for catalog No. 11.

S. F. BOWSER & CO., Inc.
Fort Wayne, Indiana

NEW YORK ATLANTA BOSTON

CHICAGO PHILADELPHIA DALLAS

MINNEAPOLIS SAN FRANCISCO ST. LOUIS

Manufacturers of standard self-measuring hand and power-driven pumps, oil and gasoline storage systems, tanks, oil-filtration and circulation systems, self-registering pipe line measures, etc. Established 1885.



Wherever electricity has solved any problem, it has done so better than any other form of power

DETROIT Electric Commercial Vehicles "get away" instantly in congested traffic. All speeds are controlled with one lever. Any ordinary driver can learn to operate a Detroit Electric. No expert care is necessary. There is no complex mechanism to be put out of order by abuse or carelessness. When the car stops the power stops—and the expense for power.

Detroit Electric Commercial Vehicles are admitted at all wharves and freight terminals. Fire hazard is reduced to a minimum. All body space is available except the driver's seat. They occupy only their own space in a garage.

THE
Detroit
ELECTRIC

Commercial Vehicles

are built exclusively for the Edison nickel and steel battery. This battery of itself is about 300 pounds lighter in a Detroit Electric Commercial Vehicle than a lead battery equipment. This admits of an all metal chassis and lighter construction throughout the car. Lighter weight means

more mileage, less wear on bearings and tires and less cost for power to move the car and its load.

The Edison battery is guaranteed to develop its full rated capacity at the end of four years. Our experience has proven that the battery increases in efficiency with use, even greater than the guaranteed capacity. This battery is practically indestructible. There are no renewals, no acids. It can be short-circuited, charged backward, overcharged, discharged to zero and left standing indefinitely.

The saving which would be effected by the use of the cheapest and most readily adapted form of power in existence is made possible for you through the use of Detroit Electric Commercial Vehicles.

48-page illustrated catalog with full information will be sent upon request. Specific information regarding your individual requirements will be gladly furnished.

ANDERSON ELECTRIC CAR COMPANY

456 Clay Ave., Detroit, U. S. A.

Branches:

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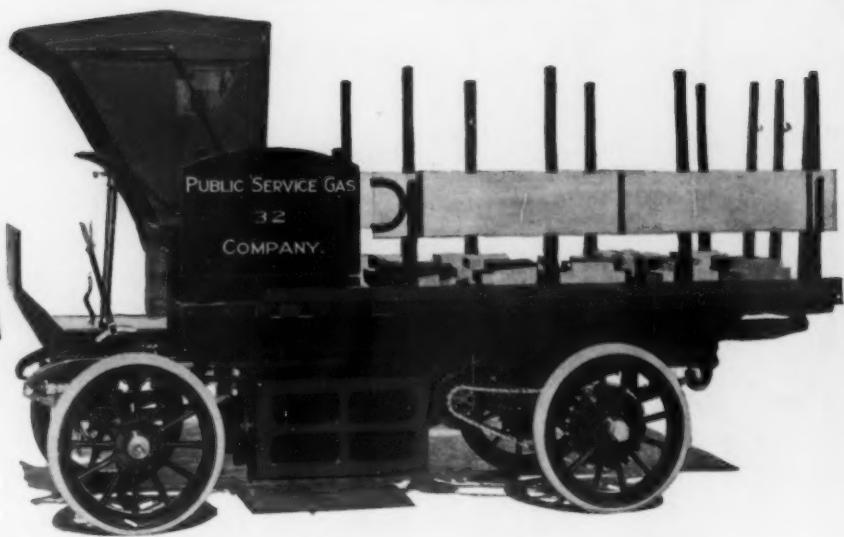
(Also Branch at Evanston, Ill.)

Selling representatives in most leading cities

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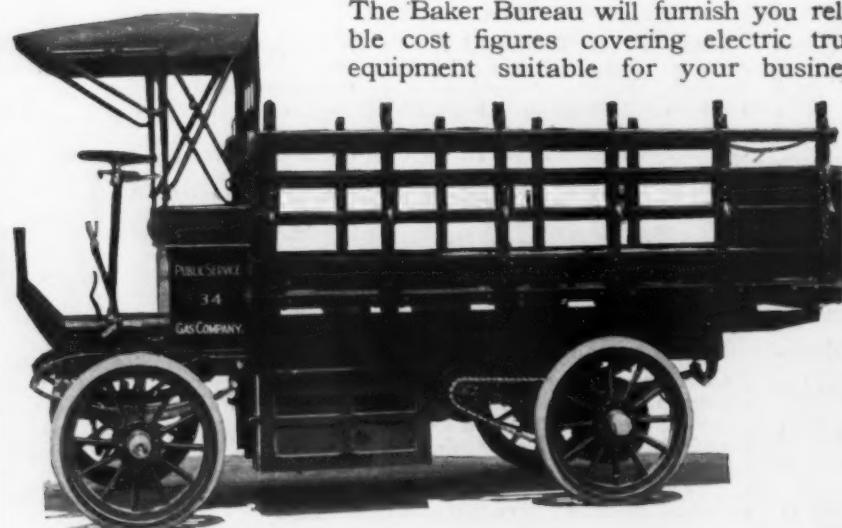
**Baker
Electrics**



Where Efficiency Counts

It is significant of the superior efficiency of Baker Electric Trucks that so many of them are purchased in fleets by Express and Public Service Companies, whose transportation experience has taught them the economy of paying a little more for unusual construction and of saving a good deal more in cost of upkeep.

The Baker Bureau will furnish you reliable cost figures covering electric truck equipment suitable for your business.



**Baker
Electrics**



The Baker Motor-Vehicle Co. Commercial Car Department

72 West 80th Street, Cleveland, Ohio

Dealers in Leading Cities

Oldest and Largest Manufacturers of Electric Vehicles in the World

HESS-BRIGHT BALL BEARINGS

On Main Journals
Unworn After
3 $\frac{1}{2}$ Years—
Approximately
150,000
Miles



BALL BEARING INTERURBAN CAR
ATLANTIC CITY & SHORE R.R.

TELEPHONE-CHARTER 3854.

G. M. B.

No. 101 WASHINGTON STREET

HARTFORD, CONN.

April 4, 1912

The Hess-Bright Manufacturing Company,
Philadelphia, Pa.

Gentlemen:— I submit herewith a summarized report, giving briefly
the results obtained in the measurement of two Hess-Bright Ball Bearings,
No. 7322, Railway Type, sent me for this purpose, the complete report of the
investigation having been made March 20, 1912.

Bearing No. 1.

The mean, or average, Radial Freedom was found to be 0.000046 in.

—practically nil.—

The mean End Play 0.00125 in.

The mean, or average, Eccentricity of Inner Race was found to be
only 0.00004 in.—also practically nil.

Bearing No. 2.

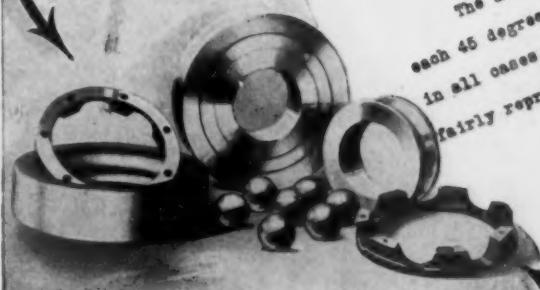
The mean Radial Freedom for this bearing was found to be 0.0003
in.

The mean, or average, End Play 0.0097 in.

The mean, or average, Eccentricity of Inner Race 0.00026 in.

The averages above given are those of readings for each, taken at
each 45 degree division of the circle. The maximum and minimum readings
in all cases being so nearly alike, practically, that the resulting averages
fairly represent the condition of these bearings at the time of the test.

Geo W. Dowd.



The bearings above referred to were taken from a single journal box of the interurban trolley car above shown. They had been in constant service since October, 1908, with no attention save to repack with grease every 10 to 12 months. Bearing No. 2 carried end thrust in addition to the weight on the axle. These bearings were put back in service after the test.

129 G. V. Electrics for the Adams Express Company

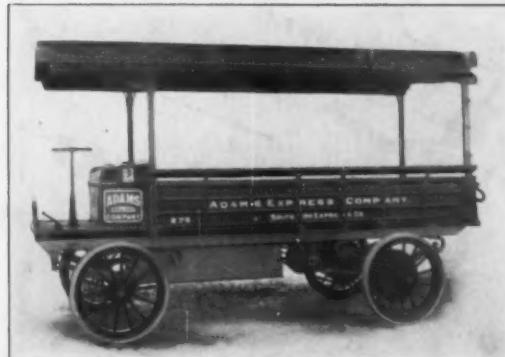
The General Vehicle Company announces the sale of 42 more 2-ton G. V. trucks to the Adams Express Company. These 42 with 87 already operated by them makes the total 129.

Many of the 87 referred to are over ten years old. They are in service in Rochester, Brooklyn and Indianapolis. The new ones will probably go to Philadelphia.

The American Express Company has purchased 58 G. V. trucks since November, 1911. They are of 2-tons and 3½-tons capacity.

Whites Express Company, of Brooklyn, operate 9 G. V. trucks and Wells Fargo Company and Chase Express Company (Brookline, Mass.) several. The National Express Company has just bought some also.

Who Sells the Fleets?



Catalog 84 on request

General Vehicle Company

PRINCIPAL OFFICE & FACTORY

Long Island City, New York

New York Chicago Boston Philadelphia St. Louis
505 Fifth Ave. Otis Building 84 State St. Witherspoon Bldg. Wainwright Bldg.